LPDES PERMIT NO. LA0120529, AI No. 126578

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

I. Company/Facility Name: Shintech Louisiana, LLC
Plaquemine PVC Plant
P.O. Box 358
Addis, Louisiana 70710

II. Issuing Office: Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
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Date Prepared: April 13, 2005, revised October 31, 2005 and February 8, 2006.

IV. Permit Action/Status:

A. Reason For Permit Action:

First time issuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. NPDES permit - NPDES permit effective date: N/A
NPDES permit expiration date: N/A

EPA has not retained enforcement authority

C. LPDES permit - LPDES permit effective date: N/A
LPDES permit expiration date: N/A

D. Application received on March 24, 2005. Addendum received on October 26, 2005.

V. Facility Information:

A. Location - On the west bank of the Mississippi River, near Plaquemine with front gate coordinates of latitude 30°16'24" North and longitude 91° 10'24" West, Iberville Parish

B. Applicant Activity

According to the application, Shintech Louisiana, LLC, proposes to construct and operate a 1.3 billion pound per year PVC plant which will manufacture polyvinyl chloride, chloride, caustic soda, 1,2-dichloroethane [ethylene dichloride (EDC)], and vinyl chloride monomer(VCM). Process Units will include a Chlor-Alkali Unit, a VCM Unit, and a PVC Unit. It is anticipated that construction will start in May 2005 with plant start up in late December 2006.

The Standard Industrial Classification (SIC) Code which is applicable to PVC is 2821 (Plastics Materials and Resins), for VCM/EDC is 2869 (Industrial Organic Chemicals, not elsewhere classified), and for chlorine/caustic is 2812 (Alkalies and Chlorine).

The proposed Plaquemine PVC Plant process-related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The organic chemicals manufacturing (EDC/VCM and PVC) unit discharges will be regulated under the Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Point Source Category (OCPSF effluent guidelines) at 40 CFR Part 414. Subpart D (Thermoplastic Resins) applies to the PVC Unit and Subpart F (Commodity Organic Chemicals) applies to the VCM Unit. Subpart I (Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment) applies to the discharges from the Waste Water Treatment Facility (WWTF) for the organic chemical manufacturing units.

The proposed Plaquemine PVC Plant Chlor-Alkali related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The inorganic chemical discharges will be regulated under the Inorganic Chemicals Manufacturing Point Source Category (Chlor-Alkali effluent guidelines) at 40 CFR Part 415. The Chlor-Alkali guidelines do not specifically address Shintech's ion exchange membrane process at Subpart F; only mercury cell and diaphragm cell processes. Therefore, proposed permit limitations have been established based on Best Professional Judgement (BPJ) using the guidelines for diaphragm cell processes which best represent the new process being used by Shintech.

The Clean Water Act (CWA) 316(b) Phase I rule was promulgated in December 2001 with an effective date of January 17, 2002. The Phase I rule applies to any "new facility" (as defined I the rule) for which construction is commenced after January 17, 2002 and for which a surface intake structure is constructed and operated that withdraws surface water from "waters of the United States" at a rate of 2.0 million gallons per day (MGD) or more and uses at least 25% of the withdrawal flow rate for cooling water purposes.

Under the regulations applicable to 316(b) are found in Chapter 40 of the Code of Federal Regulations Section 125 Subpart I (40 CFR 125). Specifically, 40 CFR 125.81 defines "New Facility". Portions of the definition follow: .....New Facility means any building, structure, facility, or installation that meets the definition of a "new source" or "new discharger" in 40

CFR 122.2 and 122.29(b)(1), (2), and (4) and is a Greenfield or stand alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. Furthermore, the definition states ....Examples of facilities that would not be considered a "new facility" include, but are not limited to, the following scenarios: A facility has an existing intake structure. Another facility (a separate industrial operation), is constructed on the same property and connects to the facility's cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a "new facility" even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

As part of the construction of the Plaquemine PVC Plant, Shintech plans to modify existing water intake structures that were installed at the dock on the Mississippi River by Ashland Chemical Company (Ashland). Currently, there are three existing pumps which were installed by Ashland [two 3,000 gallon per minute (gpm) and one 1,500 gpm pumps which equated to 10.8 MGD]. Original Ashland engineering drawings of the intake structure show the ability of the structure to facilitate two additional pumps (5 pumps total). Although Shintech plans to replace the existing pumps with two 6,800 gpm electric pumps and one 6,800 gpm diesel pump, they will use an average of 8.2 MGD and will not exceed an maximum intake rate of 9.7 MGD (less than the existing 10.8 MGD capacity) by installing flow control measures. Furthermore, the two electric pumps will be operated in cycles so only one electric pump will be operating at any given time, and the diesel pump will be used explicitly as a backup.

Although the individual pump capacities will be increased by replacing the existing pumps with larger pumps, 316(b) Phase I requirements are not applicable because of the use of flow control measures restricting greater flow than the existing flow.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Organic Chemicals, Plastics, and Synthetic Fibers Process Flow - 3.0556	40 CFR 414 Subparts D, F, and I
Inorganic Chemicals- Chlor Alkali Daily Production - Chlorine - 2,970 Klbs/day Caustic Soda - 3,390 Klbs/day	40 CFR 415 Subpart F

Other sources of technology based limits:
LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).
Best Professional Judgement
Light Commercial General Permit, LAG480000

D. Fee Rate -
1. Fee Rating Facility Type: Major
2. Complexity Type: VI
3. Wastewater Type: II
4. SIC code: 2869, 2812, and 2821

E. Continuous Facility Effluent Flow - 8.362 MGD.

VI. Receiving Waters:

Bayou La Butte (Outfall 003 - emergency use only)

1. River Basin: Terrebonne River, Segment No. 120201
2. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, and fish and wildlife propagation.

According to Shintech, emergency "overflow" conditions are those that would exist under and immediately following rainfall conditions of abnormally high intensity and/or extended duration that result in the accumulation of non-process storm water runoff at a rate greater than the facility's capacity to pump the excess storm water via Outfall 003, which discharges to the Mississippi River. Under such conditions, it is necessary to allow the gravity discharge of the excess non-process area storm water to Bayou La Butte to maintain adequate levee freeboard and protect the integrity of the levees around the non-process area storm water retention basins at the Plaquemine Plant. Examples of weather conditions that could result in such rainfall events are tropical storms/hurricanes and other high intensity/extended duration rainstorms that may occur in south Louisiana.

Mississippi River (Outfalls 001, 002, 003, and 004)

1. TSS (15%), mg/L: 32
2. Average Hardness, mg/L $CaCO_3$: 153
3. Critical Flow, cfs: 73,563.6*
4. Mixing Zone Fraction: 0.33
5. Harmonic Mean Flow, cfs: 190,055.3*
6. River Basin: Mississippi River, Segment No. 070301
7. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, fish and wildlife propagation, and drinking water supply.

Information based on the following: Water Quality Management Plan, Volume 5A, 1994; LAC 33:IX Chapter 11;/Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from monitoring station 0319 at the Plaquemine ferry landing, midstream of the Mississippi River east of Plaquemine listed in Hardness and TSS Data for All LDEQ Ambient Stations for the Period of Record as of March 1998, LeBlanc. This data is also presented in a memorandum dated March 31, 2005, from Robert Lott to Jenniffer Sheppard.

* Both the critical flow and the harmonic mean of the Mississippi River have been divided between Georgia Gulf (LA0007129, AI2455) and Shintech Plaquemine (LA0120529, AI126578) on a flow weighted basis. This was done since Shintech and Georgia Gulf have

similar waste streams and a relatively short distance between their discharge points. Georgia Gulf will receive a reduced critical flow and harmonic mean upon their next permit issuance.

VII. Outfall Information:

Outfall 001

A. Type of wastewater - the discharge of combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Continuous Flow 8.362 MGD.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 101

A. Type of wastewater - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

B. Location - Latitude 30°15'28", Longitude 91°10'30", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of process wastewaters consists of:
- sedimentation
- equalization/neutralization
- aerobic digestion (activated sludge)
- clarification

D. Flow - Continuous, (Estimated Max 30-Day) 3.302 MGD.

Process Wastewater*	3.0556 MGD
Utility Wastewater*	0.0903 MGD
Sanitary Wastewater*	0.0395 MGD
Non-process Area Stormwater*	0.1163 MGD

* Specific component waste streams are defined at Appendix A-1.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 201

A. Type of wastewater - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'23", Longitude 91°10'22", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of utility wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 1.699 MGD.
Utility Wastewater* 1.699 MGD

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 301

A. Type of wastewater - the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'24", Longitude 91°10'22", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 2.6254 MGD.

Process Wastewater* 1.5183 MGD
Non-process Area Stormwater* 1.1071 MGD

*Specific Components of the waste stream are defined at Appendix A-2

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 401

A. Type of wastewater - the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'28", Longitude 91°10'30", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of utility wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 0.7355 MGD.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 002

A. Type of wastewater - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 003

A. Type of wastewater - the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River or Bayou La Butte (emergency overflow only)

F. Basin and segment - Mississippi River Basin, Segment 070301 or to the Terrebonne Basin, Subsegment 120201 (emergency overflow situation only)

Outfall 004

A. Type of wastewater - the discharge of hydrostatic test water

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15" via final outfalls 001, 101, 201, 301, 401, or 003.

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River or Bayou La Butte (Outfall 003 emergency overflow only)

F. Basin and segment - Mississippi River Basin, Segment 070301 or to the Terrebonne Basin, Subsegment 120201 (Outfall 003 emergency overflow situation only)

VIII. Proposed Permit Limits:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

Summary of Proposed Changes From the Current LPDES Permit: This is a proposed new facility and first time issuance of an LPDES permit.

IX. Permit Limit Rationale:

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40

CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

1. Outfall(s) 001, 101, and 301 - Process Wastewaters

*Outfall 001 - the discharge combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

Flow - Report
pH - 6.0 to 9.0 s.u.

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

pH - This draft permit establishes a minimum discharge limit of 6.0 standard units and a maximum of 9.0 standard units. These limits are based on NSPS guidelines under 40 CFR 414 and 415.63 and LAC 33:IX.4903. The permittee shall maintain the pH of such wastewater within the range set forth in the permit, except that excursions from the range are permitted, provided: the total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month; and no individual excursion from the range of pH values shall exceed 60 minutes.

*Internal Outfall 101 - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

Shintech Louisiana, LLC, Plaquemine PVC Plant is subject to New Source Performance Standards (NSPS) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
Organic chemical manufacturing	40 CFR 414, Subpart(s) (D,F, and I).

Calculations and basis of permit limitations are found at Appendix A and associated appendices. See below for site-specific considerations.

Site-Specific Consideration(s)

The proposed Plaquemine PVC Plant process-related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The organic chemicals manufacturing (EDC/VCM and PVC) unit discharges will be regulated under the Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Point Source Category (OCPSF effluent guidelines) at 40 CFR Part 414. Subpart D (Thermoplastic Resins) applies to the PVC Unit and Subpart F (Commodity Organic Chemicals) applies to the VCM Unit. Subpart I (Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment) applies to the discharges from the Waste Water Treatment Facility (WWTF) for the organic chemical manufacturing units.

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

Copper - the proposed Shintech VCM Unit will have a metal-bearing stream as listed in Appendix A of 40 CFR 414. The VCM Unit will have the process 1,2 -Dichloroethane/Oxyhydrochlorination of ethylene which is listed under copper. The associated Maximum 30-Day Average Value Flow rate is 768,330 gallons per day for process wastewater and 379,000 gallons per day for process area stormwater from the VCM Unit. Therefore, limitations for Total Copper were established using a flow of 1.14733 MGD.

TOC - These limits were established based on the TOC/BOD_5 ratio from Georgia Gulf's permit (LA0007129, AI 2455), effective February 1, 1999. The following calculation was used:

Average TOC/BOD_5 ratio from Georgia Gulf's permit x Average BOD_5 limit in lbs/day established for Shintech Plaquemine = TOC Monthly Average in lbs/day

7.93617 x 747.2679 lbs/day = 5930.455 lbs/day Monthly Average

Average TOC/BOD_5 ratio from Georgia Gulf's permit	Average BOD_5 limit in lbs/day established for Shintech Plaquemine	TOC Monthly Average in lbs/day
7.93617	747.2679	5930.455 lbs/day Monthly Average

Maximum TOC/BOD_5 ratio from Georgia Gulf's permit x Maximum BOD_5 limit in lbs/day established for Shintech Plaquemine = TOC Daily Maximum in lbs/day

9.489109 x 1975.441 lbs/day = 18745 lbs/day Daily Maximum

Maximum TOC/BOD_5 ratio from Georgia Gulf's permit	Maximum BOD_5 limit in lbs/day established for Shintech Plaquemine	TOC Daily Maximum in lbs/day
9.489109	1975.441	18745 lbs/day Daily Maximum

*Internal Outfall 301 - the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Shintech Louisiana, LLC, Plaquemine PVC Plant is subject to New Source Performance Standards (NSPS) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
Chlorine/Caustic, (Ion Membrane Exchange) (Diaphragm Cell Guidelines Applied through BPJ)	40 CFR 415.65, Subpart(s) F

Calculations and basis of permit limitations are found at Appendix A and associated appendices. See below for site-specific considerations.

Site-Specific Consideration(s)

The proposed Plaquemine PVC Plant Chlor-Alkali related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The inorganic chemical discharges will be regulated under the Inorganic Chemicals Manufacturing Point Source Category (Chlor-Alkali effluent guidelines) at 40 CFR Part 415. The Chlor-Alkali guidelines do not specifically address Shintech's ion exchange membrane process at Subpart F; only mercury cell and diaphragm cell processes. Therefore, proposed permit limitations have been established based on Best Professional Judgement (BPJ) using the guidelines for diaphragm cell processes which best represent the new process being used by Shintech.

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

2. Outfall(s) 201, 401, 002, and 004 - Utility Wastewaters

* Internal Outfall 201 - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

*Internal Outfall 401 - the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Utility wastewaters including, but not limited to cooling tower blowdown, boiler blowdown and de minimis miscellaneous utility discharges, being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
TOC - 50 mg/L, daily max
Oil & Grease - 15 mg/L, daily max

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

TOC and Oil & Grease - Limitations established based on similarly permitted discharges, current LDEQ guidance, and Best Professional Judgement (BPJ).

*Outfall 002 - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

Utility wastewaters of this nature, being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
Clarifying Agents - inventory calculation

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

Clarifying Agents - This draft permit requires an inventory calculation to be contained on site. This requirement is consistent with similarly permitted discharges and BPJ.

*Outfall 004 - the discharge of hydrostatic test water

Hydrostatic test wastewaters being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
TOC - 50 mg/L, daily max
Oil and Grease - 15 mg/L, daily max
TSS - 90 mg/L, daily max
Benzene - 50 μg/L, daily max
Total Lead - 50 μg/L, daily max
Total BTEX - 250 μg/L, daily max

Site-Specific Consideration(s)

Flow, TOC, Oil & Grease, TSS, Benzene, Total Lead, and Total BTEX - Limitations and reporting frequency for these parameters were based on the requirements established in the Hydrostatic

General Permit, LAG670000. These discharges can be discharged through any final outfall.

3. Outfall 003 - Stormwater & Utility

*Outfall 003 - the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Uncontaminated or low potential contaminated stormwater discharged through discrete outfall(s) not associated with process wastewater shall receive the following BPJ limitations in accordance with this Office's guidance on stormwater, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).

Parameter	Monthly Average mg/L	Daily Maximum mg/L
Flow, MGD	Report	Report
TOC	N/A	50
Oil and Grease	N/A	15
pH, Std. Units	6.0 (min)	9.0 (max)

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

TOC, Oil & Grease, and pH - established based on similarly permitted discharges, current LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6), and Best Professional Judgement (BPJ).

According to Shintech, emergency "overflow" conditions are those that would exist under and immediately following rainfall conditions of abnormally high intensity and/or extended duration that result in the accumulation of non-process storm water runoff at a rate greater than the facility's capacity to pump the excess storm water via Outfall 003, which discharges to the Mississippi River. Under such conditions, it is necessary to allow the gravity discharge of the excess non-process area storm water to Bayou La Butte to maintain adequate levee freeboard and protect the integrity of the levees around the non-process area storm water retention basins at the Plaquemine Plant. Examples of weather conditions that could result in such rainfall events are tropical storms/hurricanes and other high intensity/extended duration rainstorms that may occur in south Louisiana.

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I)(3) and (4)], a Part II condition is proposed for applicability to all storm water discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) to be prepared by six (6) months after plant startup and commencement of discharge under the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, those plans could be incorporated by reference to the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP),

Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of stormwater associated with industrial activity, as defined in LAC 33:IX.2522.B.14 [40 CFR 122.26(b)(14)].

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. Calculations, results, and documentation are given in Appendix B.

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d)(1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix B.

The following pollutants received water quality based effluent limits:

Hexachlorobenzene

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. They are also listed in Part II of the permit.

TMDL Waterbodies

Outfalls 001, 002, 003, and 004

The discharges from outfalls 001, 002, 003, and 004 include process wastewater and process area stormwater; sanitary wastewater; non-process area stormwater runoff; and utility wastewaters including cooling tower blowdown, boiler blowdown, backwash water, and miscellaneous de minimis utility discharges are to Mississippi River, Segment No. 070301. The Mississippi River is not currently listed on the 2004 Integrated Report for any impairments.

Outfall 003 (emergency overflow only)
The discharges from Outfall 003 will be infrequent due to this wastewater being diverted as an emergency overflow only. The discharges include non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004 are to Bayou LaButte, Subsegment 120201. Bayou LaButte is currently listed on the 2004 Integrated Report as being impaired with organic enrichment/low DO, pathogen indicators, sulfates, nitrate/nitrite, and phosphorus.

Organic Enrichment/Low DO, Pathogen Indicators, Sulfates, Nitrate/Nitrite and Phosphorus
Due to the type and infrequent nature of this discharge, it is not reasonably expected to further

impair Bayou LaButte for organic enrichment/low DO, pathogen indicators, sulfates, nitrate/nitrite, and phosphorus.

Monitoring frequencies for water quality based limited parameters are established in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001.

Site-Specific Consideration(s)

None

D. Biomonitoring Requirements

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall(s) 001 and 002 are as follows:

TOXICITY TESTS	FREQUENCY
Acute static renewal 48-hour definitive toxicity test using Daphnia pulex	1/quarter(*)
Acute static renewal 48-hour definitive toxicity test using fathead minnow (Pimephales promelas)	1/quarter(*)

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to the Office of Environmental Compliance. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

(*) Biomonitoring frequencies have been increased from once per year to once per quarter for the life of the first permitting cycle of this facility to ensure the proposed discharges will not cause toxicity to the receiving stream. The determination has been made based on estimated concentrations of zinc and chlorine associated with the discharge of cooling tower blowdown from Internal Outfalls 201 and 401. Biomonitoring results will be reviewed during reissuance of this permit to determine future toxicity frequencies/ requirements.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 0.23%, 0.30%, 0.40%, 0.53%, and 0.71%. The low-flow effluent concentration (critical dilution) is defined as 0.53% effluent.

E. MONITORING FREQUENCIES

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [LAC 33:IX.2715/40 CFR 122.48(b)] and to assure compliance with permit limitations [LAC 33:IX.2707.I./40 CFR 122.44(I)]. The following section(s) explain the rationale for the monitoring frequencies stated in the draft permit.

1. Outfall 001 - the discharge combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

Flow and pH shall be monitored continuously by recorder.

2. Internal Outfall 101 - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 5 times/week by 24-hour composite sample.

Parameter(s):
BOD
TSS
TOC

A monitoring frequency of 1 time/week by 24-hour composite sample for the following listed toxic pollutant is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

Parameter(s):
Total Copper

Toxic pollutants not expected to be on-site are proposed to be monitored once per year.

3. Internal Outfall 201 - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 1 time/month by grab sample.

Parameter(s):
TOC
Oil & Grease

4. Internal Outfall 301 -the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 5 times/week by 24-hour composite sample.

Parameter(s):
TRC
TSS

A monitoring frequency of 1 time/week by 24-hour composite sample for the following listed toxic pollutants is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

Parameter(s):
Total Copper
Total Lead
Total Nickel

5. Internal Outfall 401 -the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 1 time/month by grab sample.

Parameter(s):
TOC
Oil & Grease

6.Outfall 002 - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

The following pollutant shall be monitored 5 times/week by taking an estimate.

Parameter(s):
Flow

7.Outfall 003 -the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

The following pollutant shall be monitored 1 time/quarter by taking an estimate.

Parameter(s):
Flow

The following pollutants are to be monitored 1 time/quarter by grab sample.

Parameter(s):
TOC
Oil & Grease
pH

8. Outfall 004 - the discharge of hydrostatic test water

Hydrostatic test wastewater being discharged at discrete outfall(s), will receive monitoring frequencies according to the following schedule:

The following pollutant shall be monitored 1 time/discharge event by taking an estimate.

Parameter(s):
Flow

The following pollutants are to be monitored 1 time/discharge event by grab sample.

Parameter(s):
TSS
Oil & Grease
TOC
Benzene
Total BTEX
Total Lead

X. Compliance History/DMR Review:

This is a proposed facility, therefore, no inspections have been done.

Date	Parameter	Outfall	Reported Value	Permit Limits
NONE, PROPOSED FACILITY				

XI. "IT" Questions

A complete environmental assessment is located in a document titled "Environmental Assessment Statement" (EAS) submitted to LDEQ on March 24, 2005. The EAS contains more detailed information relative to the questions below and was used to aide in the development of this draft permit.

1. Have the potential and real adverse environmental effects of the proposed facility been avoided to the maximum extent possible?

   Yes. The potential and real adverse environmental effects of the proposed facility will be avoided to the maximum extent possible. Shintech has many years of incident free experience in the design and operation of PVC plants, and its parent corporation, Shin-Etsu Chemical Company, Ltd., has many years of experience in the design and operation of Chlor-Alkali, VCM, and PVC plants. The design of the facility incorporates the successful operating experience of Shintech to minimize environmental impact. The facility is being designed around the existing landscape, utilizing the infrastructure of the former Ashland Chemical Company site and avoiding woodlands and potential wetlands to the extent possible.

   See Sections 4.1 - 4.8 and 5.0 of the EAS for further discussion on: air quality impacts; noise impacts; land resource impacts; water resource impacts; ecological, cultural, and aesthetic impacts; community environment impacts; solid and hazardous waste impacts; and regulatory compliance.

2. Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former?

   Yes. With respect to impacts to the human and natural environment, there are no significant impacts to or deterioration of the existing environment that are reasonably anticipated. The facility is designed to minimize impacts to the environment to the maximum extent possible. Therefore, it is believed that the social and economic benefits of the facility outweigh environmental impacts.

See Sections 2.1, 2.3, 2.6, 2.8, 3.6, and 4.6 of the EAS for further discussion on: the proposed action; project description; alternatives; alternative process designs; community environment; and community environmental impacts.

3. Are there alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

No. There are no alternative projects which would offer more protection to the environment without unduly curtailing the non-environmental benefits. The proposed facility will utilize state-of-the-art technology for the construction and operation of the Chlor-Alkali, VCM, and PVC Units. The Chlor-Alkali unit will utilize an ion exchange membrane cell process, which is the most advanced and environmentally-safe process for the production of chlorine and caustic soda since it does not use asbestos and mercury.

See Sections 2.3, 2.6, and 2.8 of the EAS for further discussion on: the project description; alternatives; and alternative process designs.

4. Are there alternative sites which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

No. There are no alternative sites which would offer more protection to the environment than the selected site without unduly curtailing nonenvironmental benefits. Other potential sites considered did not have existing or immediate access to the necessary infrastructure, such as brine pipelines, and dock facilities. Construction of the necessary infrastructure at other sites would result in additional environmental impact at those locations and, in the case of the dock, not provide the same level of safety. The existing dock structure is ideally located to avoid difficult river currents and vessel traffic. Other alternative sites considered did not offer these ideal dock siting conditions.

See Sections 2.2, 2.3, 2.5, 2.6, 2.8, and 3.1 - 3.5 of the EAS for further discussion on: the site description; project description; resource requirement; alternatives; alternative process designs; atmospheric quality; land resources; water resources; ecological resources; and cultural and aesthetic resources.

5. Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing nonenvironmental benefits?

No. The facility is designed to meet or exceed applicable environmental, industry, and company standards. State-of-the-art technology is being employed in all three production units. The proposed project location is on property that presently supports the infrastructure of a methanol production plant formerly owned and operated buy Ashland Chemical Company, thus minimizing direct environmental impact. The facility is also being designed around existing natural resources to further minimize environmental impact. Shintech is not aware of any other mitigating measures that would offer more protection to the environment without unduly curtailing non-environmental benefits. Appendix C of the Environmental Assessment Statement document provides multiple documents concerning the use and need for PVC and the environmental effects of VCM and PVC.

See Sections 2.3, 2.6, 2.8, 4.2 - 4.7, and 5.0 of the EAS for further discussion on: the project description; alternatives; alternative process designs; air quality impacts; land resources impacts; water resources impacts; ecological resources impacts; cultural and aesthetic

resources impacts; community environment impacts; solid and hazardous waste impacts; and regulatory compliance.

XII. Endangered Species:

The receiving waterbody, Subsegment 070301 of the Mississippi River Basin, has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which are listed as an endangered species. This draft permit has been submitted to the FWS for review in accordance with a letter dated October 21, 2005 from Watson (FWS) to Gautreaux (LDEQ). As set forth in the Memorandum of Understanding between the LDEQ and the FWS, and after consultation with FWS, LDEQ has determined that the issuance of the LPDES permit is not likely to have an adverse effect upon the Pallid Sturgeon. Effluent limitations are established in the permit to ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. The more stringent of technology and water quality based limits (as applicable) have been applied to ensure maximum protection of the receiving water.

XIII. Historic Sites:

The discharge will be from a proposed new facility. Shintech consulted with the State Historic Preservation Officer (SHPO) prior to LPDES wastewater permit application submittal to determine whether construction-related activities could potentially affect sites or properties on or eligible for listing on the National Register of Historic Places. SHPO's response letter, dated January 25, 2005 (submitted as Appendix D of the Environmental Assessment Submitted to LDEQ on March 24, 2005), stated that the facility has the potential to effect numerous cultural resources and determined that Shintech be required to conduct a Phase I cultural resource survey of the area to address potential impacts.

LDEQ also consulted with SHPO via letter on March 31, 2005, to notify of new construction associated with the LPDES application. SHPO's response letter to LDEQ, dated April 28, 2005, referenced the January 25, 2005 letter to Shintech and the recommendation for Shintech to complete a Phase I cultural resource survey of the area to address potential impacts and several additional letters of communication between all parties involved. The Phase I survey was completed and the findings were presented to SHPO in a letter dated March 30, 2005. A SHPO response was sent to the company in a letter dated April 26, 2005, indicating the need for Shintech to move into Phase II National Resource Historic Places (NRHP) testing on two of the 19 archaeological sites identified in the Phase I survey.

A Memorandum of Agreement (MOA) was signed among the U.S. Army Corps of Engineers, New Orleans District, the Louisiana State Historic Preservation Officer, the Chitimacha Tribe of Louisiana, The LDEQ, and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana (See attached Appendix E).

XIV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to issue a permit for the discharge described in the application.

XV. Variances:

No requests for variances have been received by this Office.

XVI. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

LPDES PERMIT NO. LA0120529, AI No. 126578

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

I. Company/Facility Name: Shintech Louisiana, LLC
Plaquemine PVC Plant
P.O. Box 358
Addis, Louisiana 70710

II. Issuing Office: Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

III. Prepared By: Jenniffer Sheppard
Industrial Water Permits Section
Water and Waste Permits Division
Phone #: 225-219-3135
E-mail: jenniffer.sheppard@la.gov

Date Prepared: April 13, 2005, revised October 31, 2005 and February 8, 2006.

IV. Permit Action/Status:

A. Reason For Permit Action:

First time issuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. NPDES permit - NPDES permit effective date: N/A
NPDES permit expiration date: N/A

EPA has not retained enforcement authority

C. LPDES permit - LPDES permit effective date: N/A
LPDES permit expiration date: N/A

D. Application received on March 24, 2005. Addendum received on October 26, 2005.

V. Facility Information:

A. Location - On the west bank of the Mississippi River, near Plaquemine with front gate coordinates of latitude 30°16'24" North and longitude 91° 10'24" West, Iberville Parish

B. Applicant Activity

According to the application, Shintech Louisiana, LLC, proposes to construct and operate a 1.3 billion pound per year PVC plant which will manufacture polyvinyl chloride, chloride, caustic soda, 1,2-dichloroethane [ethylene dichloride (EDC)], and vinyl chloride monomer(VCM). Process Units will include a Chlor-Alkali Unit, a VCM Unit, and a PVC Unit. It is anticipated that construction will start in May 2005 with plant start up in late December 2006.

The Standard Industrial Classification (SIC) Code which is applicable to PVC is 2821 (Plastics Materials and Resins), for VCM/EDC is 2869 (Industrial Organic Chemicals, not elsewhere classified), and for chlorine/caustic is 2812 (Alkalies and Chlorine).

The proposed Plaquemine PVC Plant process-related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The organic chemicals manufacturing (EDC/VCM and PVC) unit discharges will be regulated under the Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Point Source Category (OCPSF effluent guidelines) at 40 CFR Part 414. Subpart D (Thermoplastic Resins) applies to the PVC Unit and Subpart F (Commodity Organic Chemicals) applies to the VCM Unit. Subpart I (Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment) applies to the discharges from the Waste Water Treatment Facility (WWTF) for the organic chemical manufacturing units.

The proposed Plaquemine PVC Plant Chlor-Alkali related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The inorganic chemical discharges will be regulated under the Inorganic Chemicals Manufacturing Point Source Category (Chlor-Alkali effluent guidelines) at 40 CFR Part 415. The Chlor-Alkali guidelines do not specifically address Shintech's ion exchange membrane process at Subpart F; only mercury cell and diaphragm cell processes. Therefore, proposed permit limitations have been established based on Best Professional Judgement (BPJ) using the guidelines for diaphragm cell processes which best represent the new process being used by Shintech.

The Clean Water Act (CWA) 316(b) Phase I rule was promulgated in December 2001 with an effective date of January 17, 2002. The Phase I rule applies to any "new facility" (as defined I the rule) for which construction is commenced after January 17, 2002 and for which a surface intake structure is constructed and operated that withdraws surface water from "waters of the United States" at a rate of 2.0 million gallons per day (MGD) or more and uses at least 25% of the withdrawal flow rate for cooling water purposes.

Under the regulations applicable to 316(b) are found in Chapter 40 of the Code of Federal Regulations Section 125 Subpart I (40 CFR 125). Specifically, 40 CFR 125.81 defines "New Facility". Portions of the definition follow: .....New Facility means any building, structure, facility, or installation that meets the definition of a "new source" or "new discharger" in 40

CFR 122.2 and 122.29(b)(1), (2), and (4) and is a Greenfield or stand alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. Furthermore, the definition states ....Examples of facilities that would not be considered a "new facility" include, but are not limited to, the following scenarios: A facility has an existing intake structure. Another facility (a separate industrial operation), is constructed on the same property and connects to the facility's cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a "new facility" even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

As part of the construction of the Plaquemine PVC Plant, Shintech plans to modify existing water intake structures that were installed at the dock on the Mississippi River by Ashland Chemical Company (Ashland). Currently, there are three existing pumps which were installed by Ashland [two 3,000 gallon per minute (gpm) and one 1,500 gpm pumps which equated to 10.8 MGD]. Original Ashland engineering drawings of the intake structure show the ability of the structure to facilitate two additional pumps (5 pumps total). Although Shintech plans to replace the existing pumps with two 6,800 gpm electric pumps and one 6,800 gpm diesel pump, they will use an average of 8.2 MGD and will not exceed an maximum intake rate of 9.7 MGD (less than the existing 10.8 MGD capacity) by installing flow control measures. Furthermore, the two electric pumps will be operated in cycles so only one electric pump will be operating at any given time, and the diesel pump will be used explicitly as a backup.

Although the individual pump capacities will be increased by replacing the existing pumps with larger pumps, 316(b) Phase I requirements are not applicable because of the use of flow control measures restricting greater flow than the existing flow.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Organic Chemicals, Plastics, and Synthetic Fibers Process Flow - 3.0556	40 CFR 414 Subparts D, F, and I
Inorganic Chemicals- Chlor Alkali Daily Production - Chlorine - 2,970 Klbs/day Caustic Soda - 3,390 Klbs/day	40 CFR 415 Subpart F

Other sources of technology based limits:
LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).
Best Professional Judgement
Light Commercial General Permit, LAG480000

D. Fee Rate -
1. Fee Rating Facility Type: Major
2. Complexity Type: VI
3. Wastewater Type: II
4. SIC code: 2869, 2812, and 2821

E. Continuous Facility Effluent Flow - 8.362 MGD.

VI. Receiving Waters:

Bayou La Butte (Outfall 003 - emergency use only)

1. River Basin: Terrebonne River, Segment No. 120201
2. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, and fish and wildlife propagation.

According to Shintech, emergency "overflow" conditions are those that would exist under and immediately following rainfall conditions of abnormally high intensity and/or extended duration that result in the accumulation of non-process storm water runoff at a rate greater than the facility's capacity to pump the excess storm water via Outfall 003, which discharges to the Mississippi River. Under such conditions, it is necessary to allow the gravity discharge of the excess non-process area storm water to Bayou La Butte to maintain adequate levee freeboard and protect the integrity of the levees around the non-process area storm water retention basins at the Plaquemine Plant. Examples of weather conditions that could result in such rainfall events are tropical storms/hurricanes and other high intensity/extended duration rainstorms that may occur in south Louisiana.

Mississippi River (Outfalls 001, 002, 003, and 004)

1. TSS (15%), mg/L: 32
2. Average Hardness, mg/L $CaCO_3$: 153
3. Critical Flow, cfs: 73,563.6*
4. Mixing Zone Fraction: 0.33
5. Harmonic Mean Flow, cfs: 190,055.3*
6. River Basin: Mississippi River, Segment No. 070301
7. Designated Uses:

The designated uses are primary contact recreation, secondary contact recreation, fish and wildlife propagation, and drinking water supply.

Information based on the following: Water Quality Management Plan, Volume 5A, 1994; LAC 33:IX Chapter 11;/Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from monitoring station 0319 at the Plaquemine ferry landing, midstream of the Mississippi River east of Plaquemine listed in Hardness and TSS Data for All LDEQ Ambient Stations for the Period of Record as of March 1998, LeBlanc. This data is also presented in a memorandum dated March 31, 2005, from Robert Lott to Jenniffer Sheppard.

* Both the critical flow and the harmonic mean of the Mississippi River have been divided between Georgia Gulf (LA0007129, AI2455) and Shintech Plaquemine (LA0120529, AI126578) on a flow weighted basis. This was done since Shintech and Georgia Gulf have

similar waste streams and a relatively short distance between their discharge points. Georgia Gulf will receive a reduced critical flow and harmonic mean upon their next permit issuance.

VII. Outfall Information:

Outfall 001

A. Type of wastewater - the discharge of combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Continuous Flow 8.362 MGD.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 101

A. Type of wastewater - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

B. Location - Latitude 30°15'28", Longitude 91°10'30", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of process wastewaters consists of:
- sedimentation
- equalization/neutralization
- aerobic digestion (activated sludge)
- clarification

D. Flow - Continuous, (Estimated Max 30-Day) 3.302 MGD.

Process Wastewater*	3.0556 MGD
Utility Wastewater*	0.0903 MGD
Sanitary Wastewater*	0.0395 MGD
Non-process Area Stormwater*	0.1163 MGD

* Specific component waste streams are defined at Appendix A-1.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 201

A. Type of wastewater - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'23", Longitude 91°10'22", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of utility wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 1.699 MGD.
Utility Wastewater* 1.699 MGD

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 301

A. Type of wastewater - the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'24", Longitude 91°10'22", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 2.6254 MGD.

Process Wastewater* 1.5183 MGD
Non-process Area Stormwater* 1.1071 MGD

*Specific Components of the waste stream are defined at Appendix A-2

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data - The effluent data are contained in Appendix C.

Internal Outfall 401

A. Type of wastewater - the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Latitude 30°15'28", Longitude 91°10'30", discharge to the Mississippi River via Final Outfall 001 at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - treatment of utility wastewaters consists of:
- neutralization

D. Flow - Continuous, (Estimated Max 30-Day) 0.7355 MGD.

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 002

A. Type of wastewater - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 003

A. Type of wastewater - the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15".

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River or Bayou La Butte (emergency overflow only)

F. Basin and segment - Mississippi River Basin, Segment 070301 or to the Terrebonne Basin, Subsegment 120201 (emergency overflow situation only)

Outfall 004

A. Type of wastewater - the discharge of hydrostatic test water

B. Location - Discharge to the Mississippi River at Latitude 30°16'33", Longitude 91°10'15" via final outfalls 001, 101, 201, 301, 401, or 003.

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Mississippi River or Bayou La Butte (Outfall 003 emergency overflow only)

F. Basin and segment - Mississippi River Basin, Segment 070301 or to the Terrebonne Basin, Subsegment 120201 (Outfall 003 emergency overflow situation only)

VIII. Proposed Permit Limits:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

Summary of Proposed Changes From the Current LPDES Permit: This is a proposed new facility and first time issuance of an LPDES permit.

IX. Permit Limit Rationale:

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40

CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

1. Outfall(s) 001, 101, and 301 - Process Wastewaters

*Outfall 001 - the discharge combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

Flow - Report
pH - 6.0 to 9.0 s.u.

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

pH - This draft permit establishes a minimum discharge limit of 6.0 standard units and a maximum of 9.0 standard units. These limits are based on NSPS guidelines under 40 CFR 414 and 415.63 and LAC 33:IX.4903. The permittee shall maintain the pH of such wastewater within the range set forth in the permit, except that excursions from the range are permitted, provided: the total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month; and no individual excursion from the range of pH values shall exceed 60 minutes.

*Internal Outfall 101 - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

Shintech Louisiana, LLC, Plaquemine PVC Plant is subject to New Source Performance Standards (NSPS) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
Organic chemical manufacturing	40 CFR 414, Subpart(s) (D,F, and I).

Calculations and basis of permit limitations are found at Appendix A and associated appendices. See below for site-specific considerations.

Site-Specific Consideration(s)

The proposed Plaquemine PVC Plant process-related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The organic chemicals manufacturing (EDC/VCM and PVC) unit discharges will be regulated under the Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Point Source Category (OCPSF effluent guidelines) at 40 CFR Part 414. Subpart D (Thermoplastic Resins) applies to the PVC Unit and Subpart F (Commodity Organic Chemicals) applies to the VCM Unit. Subpart I (Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment) applies to the discharges from the Waste Water Treatment Facility (WWTF) for the organic chemical manufacturing units.

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

Copper - the proposed Shintech VCM Unit will have a metal-bearing stream as listed in Appendix A of 40 CFR 414. The VCM Unit will have the process 1,2 -Dichloroethane/Oxyhydrochlorination of ethylene which is listed under copper. The associated Maximum 30-Day Average Value Flow rate is 768,330 gallons per day for process wastewater and 379,000 gallons per day for process area stormwater from the VCM Unit. Therefore, limitations for Total Copper were established using a flow of 1.14733 MGD.

TOC - These limits were established based on the TOC/BOD_5 ratio from Georgia Gulf's permit (LA0007129, AI 2455), effective February 1, 1999. The following calculation was used:

Average TOC/BOD_5 ratio from Georgia Gulf's permit x Average BOD_5 limit in lbs/day established for Shintech Plaquemine = TOC Monthly Average in lbs/day

7.93617 x 747.2679 lbs/day = 5930.455 lbs/day Monthly Average

Average TOC/BOD_5 ratio from Georgia Gulf's permit	Average BOD_5 limit in lbs/day established for Shintech Plaquemine	TOC Monthly Average in lbs/day
7.93617	747.2679	5930.455 lbs/day Monthly Average

Maximum TOC/BOD_5 ratio from Georgia Gulf's permit x Maximum BOD_5 limit in lbs/day established for Shintech Plaquemine = TOC Daily Maximum in lbs/day

9.489109 x 1975.441 lbs/day = 18745 lbs/day Daily Maximum

Maximum TOC/BOD_5 ratio from Georgia Gulf's permit	Maximum BOD_5 limit in lbs/day established for Shintech Plaquemine	TOC Daily Maximum in lbs/day
9.489109	1975.441	18745 lbs/day Daily Maximum

*Internal Outfall 301 - the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Shintech Louisiana, LLC, Plaquemine PVC Plant is subject to New Source Performance Standards (NSPS) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
Chlorine/Caustic, (Ion Membrane Exchange) (Diaphragm Cell Guidelines Applied through BPJ)	40 CFR 415.65, Subpart(s) F

Calculations and basis of permit limitations are found at Appendix A and associated appendices. See below for site-specific considerations.

Site-Specific Consideration(s)

The proposed Plaquemine PVC Plant Chlor-Alkali related wastewaters will be regulated under the New Source Performance Standards (NSPS) of the National Categorical Effluent Guidelines and Standards. The inorganic chemical discharges will be regulated under the Inorganic Chemicals Manufacturing Point Source Category (Chlor-Alkali effluent guidelines) at 40 CFR Part 415. The Chlor-Alkali guidelines do not specifically address Shintech's ion exchange membrane process at Subpart F; only mercury cell and diaphragm cell processes. Therefore, proposed permit limitations have been established based on Best Professional Judgement (BPJ) using the guidelines for diaphragm cell processes which best represent the new process being used by Shintech.

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

2. Outfall(s) 201, 401, 002, and 004 - Utility Wastewaters

* Internal Outfall 201 - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

*Internal Outfall 401 - the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Utility wastewaters including, but not limited to cooling tower blowdown, boiler blowdown and de minimis miscellaneous utility discharges, being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
TOC - 50 mg/L, daily max
Oil & Grease - 15 mg/L, daily max

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

TOC and Oil & Grease - Limitations established based on similarly permitted discharges, current LDEQ guidance, and Best Professional Judgement (BPJ).

*Outfall 002 - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

Utility wastewaters of this nature, being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
Clarifying Agents - inventory calculation

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

Clarifying Agents - This draft permit requires an inventory calculation to be contained on site. This requirement is consistent with similarly permitted discharges and BPJ.

*Outfall 004 - the discharge of hydrostatic test water

Hydrostatic test wastewaters being discharged to discrete outfalls receive BPJ limitations/monitoring requirements according to the following schedule:

Flow - Report
TOC - 50 mg/L, daily max
Oil and Grease - 15 mg/L, daily max
TSS - 90 mg/L, daily max
Benzene - 50 μg/L, daily max
Total Lead - 50 μg/L, daily max
Total BTEX - 250 μg/L, daily max

Site-Specific Consideration(s)

Flow, TOC, Oil & Grease, TSS, Benzene, Total Lead, and Total BTEX - Limitations and reporting frequency for these parameters were based on the requirements established in the Hydrostatic

General Permit, LAG670000. These discharges can be discharged through any final outfall.

3. Outfall 003 - Stormwater & Utility

*Outfall 003 - the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Uncontaminated or low potential contaminated stormwater discharged through discrete outfall(s) not associated with process wastewater shall receive the following BPJ limitations in accordance with this Office's guidance on stormwater, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).

Parameter	Monthly Average mg/L	Daily Maximum mg/L
Flow, MGD	Report	Report
TOC	N/A	50
Oil and Grease	N/A	15
pH, Std. Units	6.0 (min)	9.0 (max)

Site-Specific Consideration(s)

Flow - This draft permit requires the monthly average flow and daily maximum flow. This requirement is consistent with LAC 33:IX.2707.I.1.b/40 CFR 122.44 (I)(1)(ii).

TOC, Oil & Grease, and pH - established based on similarly permitted discharges, current LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6), and Best Professional Judgement (BPJ).

According to Shintech, emergency "overflow" conditions are those that would exist under and immediately following rainfall conditions of abnormally high intensity and/or extended duration that result in the accumulation of non-process storm water runoff at a rate greater than the facility's capacity to pump the excess storm water via Outfall 003, which discharges to the Mississippi River. Under such conditions, it is necessary to allow the gravity discharge of the excess non-process area storm water to Bayou La Butte to maintain adequate levee freeboard and protect the integrity of the levees around the non-process area storm water retention basins at the Plaquemine Plant. Examples of weather conditions that could result in such rainfall events are tropical storms/hurricanes and other high intensity/extended duration rainstorms that may occur in south Louisiana.

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I)(3) and (4)], a Part II condition is proposed for applicability to all storm water discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) to be prepared by six (6) months after plant startup and commencement of discharge under the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, those plans could be incorporated by reference to the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP),

Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of stormwater associated with industrial activity, as defined in LAC 33:IX.2522.B.14 [40 CFR 122.26(b)(14)].

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. Calculations, results, and documentation are given in Appendix B.

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d)(1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix B.

The following pollutants received water quality based effluent limits:

Hexachlorobenzene

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. They are also listed in Part II of the permit.

TMDL Waterbodies

Outfalls 001, 002, 003, and 004

The discharges from outfalls 001, 002, 003, and 004 include process wastewater and process area stormwater; sanitary wastewater; non-process area stormwater runoff; and utility wastewaters including cooling tower blowdown, boiler blowdown, backwash water, and miscellaneous de minimis utility discharges are to Mississippi River, Segment No. 070301. The Mississippi River is not currently listed on the 2004 Integrated Report for any impairments.

Outfall 003 (emergency overflow only)
The discharges from Outfall 003 will be infrequent due to this wastewater being diverted as an emergency overflow only. The discharges include non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004 are to Bayou LaButte, Subsegment 120201. Bayou LaButte is currently listed on the 2004 Integrated Report as being impaired with organic enrichment/low DO, pathogen indicators, sulfates, nitrate/nitrite, and phosphorus.

Organic Enrichment/Low DO, Pathogen Indicators, Sulfates, Nitrate/Nitrite and Phosphorus
Due to the type and infrequent nature of this discharge, it is not reasonably expected to further

impair Bayou LaButte for organic enrichment/low DO, pathogen indicators, sulfates, nitrate/nitrite, and phosphorus.

Monitoring frequencies for water quality based limited parameters are established in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001.

Site-Specific Consideration(s)

None

D. Biomonitoring Requirements

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall(s) 001 and 002 are as follows:

TOXICITY TESTS	FREQUENCY
Acute static renewal 48-hour definitive toxicity test using Daphnia pulex	1/quarter(*)
Acute static renewal 48-hour definitive toxicity test using fathead minnow (Pimephales promelas)	1/quarter(*)

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to the Office of Environmental Compliance. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

(*) Biomonitoring frequencies have been increased from once per year to once per quarter for the life of the first permitting cycle of this facility to ensure the proposed discharges will not cause toxicity to the receiving stream. The determination has been made based on estimated concentrations of zinc and chlorine associated with the discharge of cooling tower blowdown from Internal Outfalls 201 and 401. Biomonitoring results will be reviewed during reissuance of this permit to determine future toxicity frequencies/ requirements.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 0.23%, 0.30%, 0.40%, 0.53%, and 0.71%. The low-flow effluent concentration (critical dilution) is defined as 0.53% effluent.

E. MONITORING FREQUENCIES

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [LAC 33:IX.2715/40 CFR 122.48(b)] and to assure compliance with permit limitations [LAC 33:IX.2707.I./40 CFR 122.44(I)]. The following section(s) explain the rationale for the monitoring frequencies stated in the draft permit.

1. Outfall 001 - the discharge combined flows from Internal Outfalls 101, 201, 301, and 401, and hydrostatic test discharges from Outfall 004.

Flow and pH shall be monitored continuously by recorder.

2. Internal Outfall 101 - the discharge of process wastewater and process area stormwater from the PVC, VCM, and EDC Units; sanitary wastewater; non-process area stormwater runoff; cooling tower blowdown; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 5 times/week by 24-hour composite sample.

Parameter(s):
BOD
TSS
TOC

A monitoring frequency of 1 time/week by 24-hour composite sample for the following listed toxic pollutant is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

Parameter(s):
Total Copper

Toxic pollutants not expected to be on-site are proposed to be monitored once per year.

3. Internal Outfall 201 - the discharge of cooling tower blowdown and boiler blowdown from the VCM and Chlor-Alkali Units; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 1 time/month by grab sample.

Parameter(s):
TOC
Oil & Grease

4. Internal Outfall 301 -the discharge of process wastewater and process area stormwater from the Chlor-Alkali Unit and Tank Yard Area; non-process area stormwater runoff; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 5 times/week by 24-hour composite sample.

Parameter(s):
TRC
TSS

A monitoring frequency of 1 time/week by 24-hour composite sample for the following listed toxic pollutants is considered adequate for the protection of the receiving water and its designated uses as stated in Section VI.7.

Parameter(s):
Total Copper
Total Lead
Total Nickel

5. Internal Outfall 401 -the discharge of cooling tower blowdown and boiler blowdown from the PVC and Utility Units; D.I. water backwash; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

Flow shall be monitored continuously by recorder. The following pollutants are to be monitored 1 time/month by grab sample.

Parameter(s):
TOC
Oil & Grease

6.Outfall 002 - the discharge of the underflow from the raw river water intake clarifier and solids to the river.

The following pollutant shall be monitored 5 times/week by taking an estimate.

Parameter(s):
Flow

7.Outfall 003 -the discharge of non-process area stormwater; and miscellaneous de minimis utility discharges from general facility washwater, steam trap condensate, safety shower and eye wash station water, fire fighting system test water, pump bearing cooling water, air conditioning condensate, and previously monitored hydrostatic test water from Outfall 004.

The following pollutant shall be monitored 1 time/quarter by taking an estimate.

Parameter(s):
Flow

The following pollutants are to be monitored 1 time/quarter by grab sample.

Parameter(s):
TOC
Oil & Grease
pH

8. Outfall 004 - the discharge of hydrostatic test water

Hydrostatic test wastewater being discharged at discrete outfall(s), will receive monitoring frequencies according to the following schedule:

The following pollutant shall be monitored 1 time/discharge event by taking an estimate.

Parameter(s):
Flow

The following pollutants are to be monitored 1 time/discharge event by grab sample.

Parameter(s):
TSS
Oil & Grease
TOC
Benzene
Total BTEX
Total Lead

X. Compliance History/DMR Review:

This is a proposed facility, therefore, no inspections have been done.

Date	Parameter	Outfall	Reported Value	Permit Limits
NONE, PROPOSED FACILITY				

XI. "IT" Questions

A complete environmental assessment is located in a document titled "Environmental Assessment Statement" (EAS) submitted to LDEQ on March 24, 2005. The EAS contains more detailed information relative to the questions below and was used to aide in the development of this draft permit.

1. Have the potential and real adverse environmental effects of the proposed facility been avoided to the maximum extent possible?

   Yes. The potential and real adverse environmental effects of the proposed facility will be avoided to the maximum extent possible. Shintech has many years of incident free experience in the design and operation of PVC plants, and its parent corporation, Shin-Etsu Chemical Company, Ltd., has many years of experience in the design and operation of Chlor-Alkali, VCM, and PVC plants. The design of the facility incorporates the successful operating experience of Shintech to minimize environmental impact. The facility is being designed around the existing landscape, utilizing the infrastructure of the former Ashland Chemical Company site and avoiding woodlands and potential wetlands to the extent possible.

   See Sections 4.1 - 4.8 and 5.0 of the EAS for further discussion on: air quality impacts; noise impacts; land resource impacts; water resource impacts; ecological, cultural, and aesthetic impacts; community environment impacts; solid and hazardous waste impacts; and regulatory compliance.

2. Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former?

   Yes. With respect to impacts to the human and natural environment, there are no significant impacts to or deterioration of the existing environment that are reasonably anticipated. The facility is designed to minimize impacts to the environment to the maximum extent possible. Therefore, it is believed that the social and economic benefits of the facility outweigh environmental impacts.

See Sections 2.1, 2.3, 2.6, 2.8, 3.6, and 4.6 of the EAS for further discussion on: the proposed action; project description; alternatives; alternative process designs; community environment; and community environmental impacts.

3. Are there alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

No. There are no alternative projects which would offer more protection to the environment without unduly curtailing the non-environmental benefits. The proposed facility will utilize state-of-the-art technology for the construction and operation of the Chlor-Alkali, VCM, and PVC Units. The Chlor-Alkali unit will utilize an ion exchange membrane cell process, which is the most advanced and environmentally-safe process for the production of chlorine and caustic soda since it does not use asbestos and mercury.

See Sections 2.3, 2.6, and 2.8 of the EAS for further discussion on: the project description; alternatives; and alternative process designs.

4. Are there alternative sites which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

No. There are no alternative sites which would offer more protection to the environment than the selected site without unduly curtailing nonenvironmental benefits. Other potential sites considered did not have existing or immediate access to the necessary infrastructure, such as brine pipelines, and dock facilities. Construction of the necessary infrastructure at other sites would result in additional environmental impact at those locations and, in the case of the dock, not provide the same level of safety. The existing dock structure is ideally located to avoid difficult river currents and vessel traffic. Other alternative sites considered did not offer these ideal dock siting conditions.

See Sections 2.2, 2.3, 2.5, 2.6, 2.8, and 3.1 - 3.5 of the EAS for further discussion on: the site description; project description; resource requirement; alternatives; alternative process designs; atmospheric quality; land resources; water resources; ecological resources; and cultural and aesthetic resources.

5. Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing nonenvironmental benefits?

No. The facility is designed to meet or exceed applicable environmental, industry, and company standards. State-of-the-art technology is being employed in all three production units. The proposed project location is on property that presently supports the infrastructure of a methanol production plant formerly owned and operated buy Ashland Chemical Company, thus minimizing direct environmental impact. The facility is also being designed around existing natural resources to further minimize environmental impact. Shintech is not aware of any other mitigating measures that would offer more protection to the environment without unduly curtailing non-environmental benefits. Appendix C of the Environmental Assessment Statement document provides multiple documents concerning the use and need for PVC and the environmental effects of VCM and PVC.

See Sections 2.3, 2.6, 2.8, 4.2 - 4.7, and 5.0 of the EAS for further discussion on: the project description; alternatives; alternative process designs; air quality impacts; land resources impacts; water resources impacts; ecological resources impacts; cultural and aesthetic

resources impacts; community environment impacts; solid and hazardous waste impacts; and regulatory compliance.

XII. Endangered Species:

The receiving waterbody, Subsegment 070301 of the Mississippi River Basin, has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which are listed as an endangered species. This draft permit has been submitted to the FWS for review in accordance with a letter dated October 21, 2005 from Watson (FWS) to Gautreaux (LDEQ). As set forth in the Memorandum of Understanding between the LDEQ and the FWS, and after consultation with FWS, LDEQ has determined that the issuance of the LPDES permit is not likely to have an adverse effect upon the Pallid Sturgeon. Effluent limitations are established in the permit to ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. The more stringent of technology and water quality based limits (as applicable) have been applied to ensure maximum protection of the receiving water.

XIII. Historic Sites:

The discharge will be from a proposed new facility. Shintech consulted with the State Historic Preservation Officer (SHPO) prior to LPDES wastewater permit application submittal to determine whether construction-related activities could potentially affect sites or properties on or eligible for listing on the National Register of Historic Places. SHPO's response letter, dated January 25, 2005 (submitted as Appendix D of the Environmental Assessment Submitted to LDEQ on March 24, 2005), stated that the facility has the potential to effect numerous cultural resources and determined that Shintech be required to conduct a Phase I cultural resource survey of the area to address potential impacts.

LDEQ also consulted with SHPO via letter on March 31, 2005, to notify of new construction associated with the LPDES application. SHPO's response letter to LDEQ, dated April 28, 2005, referenced the January 25, 2005 letter to Shintech and the recommendation for Shintech to complete a Phase I cultural resource survey of the area to address potential impacts and several additional letters of communication between all parties involved. The Phase I survey was completed and the findings were presented to SHPO in a letter dated March 30, 2005. A SHPO response was sent to the company in a letter dated April 26, 2005, indicating the need for Shintech to move into Phase II National Resource Historic Places (NRHP) testing on two of the 19 archaeological sites identified in the Phase I survey.

A Memorandum of Agreement (MOA) was signed among the U.S. Army Corps of Engineers, New Orleans District, the Louisiana State Historic Preservation Officer, the Chitimacha Tribe of Louisiana, The LDEQ, and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana (See attached Appendix E).

XIV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to issue a permit for the discharge described in the application.

XV. Variances:

No requests for variances have been received by this Office.

XVI. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

Appendix A

05/10/2005 Calculation of Technology Based Limits for Shintech Plaquemine

(*1) TABLE 1

Permittee:	Shintech Plaquemine	
Permit Number:	LA0120529 AI126578	
Appendix	Appendix A-1	
[] Flow Basis 1=proc, 0=all	0	
Concentration flow, (MGD)	---	
GL vs Old, 0=n, 1=y, 2=GL+Old	1	
Outfall number	Out. 101	
Deepwell fract., 40 CFR 122.50		

(*2)

OCPSF Subpart I=1, J=2	1	
OCPSF PROCESS FLOW CALCULATION:	MGD	gpm
PVC Unit	1.4853	
VCM Unit	0.76833	
PVC Process Area SW	0.252	
VCM Process Area SW	0.379	
Common Process Area SW	0.171	
TOTAL PROCESS FLOW:	3.05563	---
BOD5/TSS BPJ ALLOCATION FLOWS:	MGD	gpm
PVC Unit	0.012	
VCM Unit	0.0043	
Chlor-Alkali Unit	0.019	
Admin.	0.0042	
TOTAL SANITARY	0.0395	
MISCELLANEOUS:	MGD	gpm
PVC Non-process area SW	0.0014	
VCM Non-process area SW	0.0049	
Common Non-process area SW	0.11	
TOTAL MISCELLANEOUS FLOWS:	0.1163	---
UTILITY WASTEWATER:	MGD	gpm
PVC Unit	0.0903	
TOTAL UTILITY WW FLOWS:	0.0903	---
TOTAL OCPSF+BPJ FLOW:	3.30173	---

(*3) Fraction of OCPSF Conc. or BPJ []

Fract =0, []=1	1	BOD,avg	BOD,max	TSS,avg	TSS,max
Miscellaneous WW		0.5	0.5	0.5	0.5
Misc. WW, mg/L		5	10	10	20
Utility WW		0.25	0.25	0.25	0.25
Utility WW, mg/L		5	10	10	20
Sanitary, mg/L		30	45	30	45

Conversion Factors:

Conv mg/L-->lbs/da	8.34
Conv ug/L-->mg/L:	0.0001
Conv gpm-->MGD:	0.00144

(*4)

Metal+CN Flows:	MGD	gpm
Total Chromium		
Total Copper	1.14733	
Total Lead		
Total Nickel		
Total Zinc		
Total Cyanide		

(*8)

OCPSF Alternate Flows:	MGD
Conventionals:	
Organic Toxics:	---
Process Waste Water	
Process Stormwater	

(*5)

OCPSF Guideline Subpart:	Prod. 1000 lbs per day	Prod. Fraction of Total
B, Rayon Fibers		---
C, Other Fibers		---
D, Thermoplastic Resins		0.2338
E, Thermosetting Resins		---
F, Commodity Organics		0.7662
G, Bulk Organics		---
H, Specialty Organics		---
Total:	---	1

(*9) Page and Table Numbering

	1=y, 0=n
1st Input Page	1
2nd Input Page	0
OCPSF	1
SS Metals	0
Inorganic	0
Fertilizer	0
Pesticides	0
COD/TOC/O&G Tbl	1
BOD/TSS Tbl	1
Table Designation Sequence	
Pesticides &OCPSF	0
PestMetal 1=y, 0=n	0

(*6)

COD & TOC Ratios:	Average	Maximum
COD/BOD5 ratio		
TOC/BOD5 ratio[*1]	7.93617	9.489109

Flow (*10)

COD,TOC, O&G []:	Average	Maximum	MGD
COD, mg/L			---
TOC, mg/L			---
O&G, mg/L			---

COD and TOC limits, precalc

COD,Avg (lbs/day)	0
COD,Max (lbs/day)	0
TOC,Avg (lbs/day)	0
TOC,Max (lbs/day)	0

(*7)

INORGANIC GUIDELINES:

New Source 1=y 0=n	0	Prod.			OCPSF BOD5
O Fraction=0, []=1	0	1000 lbs	Flow	Flow	OCPSF Fraction
40 CFR 415		per day	MGD	gpm	Avg Max
40 CFR 415.63 Mercury					1 1
40 CFR 415.63 Diaphragm					1 1
					1 1

[*1] TOC/BOD5 ratio from Georgia Gulf's permit (LA0007129, AI2455) effective 02/01/99.

OCPSF+Inorganic 3.30173

Calculation of Technology Based Limits for Shintech Plaquemine

Out. 101

Conventional pollutant loading calculations, BOD5 and TSS

TABLE 2

Calculation of BOD5, and TSS limits:

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF GL 40 CFR 414 Subpart:	BOD5 Avg mg/L	BOD5 Max mg/L	TSS Avg mg/L	TSS Max mg/L	Prod. 1000 lbs per day	Prod. Fraction of Total	Process Flow (MGD)	Conv. Factor	BOD5 Avg lbs/day	BOD5 Max lbs/day	TSS Avg lbs/day	TSS Max lbs/day
B, Rayon Fibers							---	8.34	---	---	---	---
C, Other Fibers							---	8.34	---	---	---	---
D,Thermoplastic Resins	24	64	40	130		0.2338	3.05563	8.34	142.9956	381.3215	238.3259	774.5593
E,Thermosetting Resins							---	8.34	---	---	---	---
F, Commodity Organics	30	80	46	149		0.7662	3.05563	8.34	585.7742	1562.064	898.1871	2909.345
G, Bulk Organics							---	8.34	---	---	---	---
H, Specialty Organics							---	8.34	---	---	---	---
Total/Weighted[]	28.5972	76.2592	44.5972	144.5578		1	3.05563	8.34	728.7697	1943.386	1136.513	3683.904
BPJ Sources/Guidelines	BOD5 Avg	BOD5 Max	TSS Avg	TSS Max				Conv.	BOD5 Avg	BOD5 Max	TSS Avg	TSS Max
BPJ Sources:	mg/L	mg/L	mg/L	mg/L			Flow (MGD)	Factor	lbs/day	lbs/day	lbs/day	lbs/day
Sanitary WW:	30	45	30	45			0.0395	8.34	9.8829	14.82435	9.8829	14.82435
Miscellaneous:	5	10	10	20			0.1163	8.34	4.84971	9.69942	9.69942	19.39884
Utility Wastewater:	5	10	10	20			0.0903	8.34	3.76551	7.53102	7.53102	15.06204
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
BPJ Source Total:							0.2461		18.49812	32.05479	27.11334	49.28523
Other Guidelines: Inorganic 40 CFR 415	BOD5 Avg mg/L	BOD5 Max mg/L	TSS Avg lbs/1000	TSS Max lbs/1000	Prod. 1000 lbs per day	Flow to Tmt. Plt. Fraction	Flow (MGD)	Conv. Factor	BOD5 Avg lbs/day	BOD5 Max lbs/day	TSS Avg lbs/day	TSS Max lbs/day
					---	---	---	8.34	---	---	---	---
					---	---	---	8.34	---	---	---	---
					---	---	---	8.34	---	---	---	---
[*1] TOC/BOD5 ratio fr					---	---	---	8.34	---	---	---	---
	BOD5 Avg lbs/1000	BOD5 Max lbs/1000	TSS Avg lbs/1000	TSS Max lbs/1000	Prod. 1000 lbs per day	Flow to Tmt. Plt. Fraction	Flow (MGD)		BOD5 Avg lbs/day	BOD5 Max lbs/day	TSS Avg lbs/day	TSS Max lbs/day
					---	---	---		---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
Other Guideline Total (lbs/day)							---		---	---	---	---
BOD5/TSS Grand Total (lbs/day)							3.30173		747.2679	1975.441	1163.626	3733.19

Calculation of Technology Based Limits for Shintech Plaquemine

Out. 101

Non-conventional pollutant loading calculations, COD, TOC; Conventional, Oil and Grease

TABLE 3

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
	COD	COD	TOC	TOC	Prod.	Flow to		Conv.	COD	COD	TOC	TOC
Guideline Subpart:	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.		Factor	Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction			lbs/day	lbs/day	lbs/day	lbs/day
	---	---	---	---	---	---			---	---	---	---
			---	---		---			---	---	---	---
			---	---		---			---	---	---	---
Guideline Total									---	---	---	---
BPJ Source(s) or	COD	COD	TOC	TOC		COD	TOC	Conv.	COD	COD	TOC	TOC
Flow Based Guidelines	Avg	Max	Avg	Max		Flow	Flow	Factor	Avg	Max	Avg	Max
	mg/L	mg/L	mg/L	mg/L		(MGD)	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
	---	---	---	---		---	---	8.34	---	---	---	---
	---	---	---	---		---	---	8.34	---	---	---	---
	---	---	---	---		---	---	8.34	---	---	---	---
BPJ Source/GL Total									---	---	---	---
COD or TOC/BOD Ratio,	COD/BOD5	COD/BOD5	TOC/BOD5	TOC/BOD5	BOD5	BOD5			COD	COD	TOC	TOC
Source:	Ratio	Ratio	Ratio	Ratio	limit	limit			Avg	Max	Avg	Max
	Avg	Max	Avg	Max	Avg	Max			lbs/day	lbs/day	lbs/day	lbs/day
All sources	---	---	7.93617	9.489109	747.2679	1975.441			---	---	5930.445	18745.17
									---	---	---	---
Ratio Total									---	---	5930.445	18745.17
COD/TOC limits, precalc.									---	---	---	---
COD/TOC Total (lbs/day)									---	---	5930.445	18745.17
Guideline Source(s) of	O&G	O&G			Prod.	Flow to		Conv.	O&G	O&G		
Oil and Grease (O&G)	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.		Factor	Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction			lbs/day	lbs/day	lbs/day	lbs/day
			---	---		---			---	---	---	---
			---	---		---			---	---	---	---
BPJ Source(s) of	O&G	O&G				O&G		Conv.	O&G	O&G		
Oil and Grease (O&G)	Avg	Max	Avg	Max		Flow	Flow	Factor	Avg	Max	Avg	Max
	mg/L	mg/L	mg/L	mg/L		(MGD)	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
	---	---	---	---		---	---	8.34	---	---	---	---
	---	---	---	---		---	---	8.34	---	---	---	---
O&G Total (lbs/day)									---	---	---	---

Calculation of Technology Based Limits for Shintech Plaquemine
Out. 101
TABLE 4

Calculation Summary of Conventional and Non-Conventional Limits

(*1) Parameter	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Old Avg lbs/day	(*8) Tech Old Max 0=no scr. 1=OldvsGL 2=Old+GL lbs/day	(*9) Anti-Back	(*10) Out. 101 Avg lbs/day	(*11) Out. 101 Max lbs/day	(*12) Out. 101 Avg mg/L	(*13) Out. 101 Max mg/L
CONVENTIONAL												
BOD5				747.2679	1975.441			---	747	1975	---	---
TSS				1163.626	3733.19			---	1164	3733	---	---
Oil and Grease				---	---			---	---	---	---	---
NON-CONVENTIONAL												
COD				---	---			---	---	---	---	---
TOC				5930.445	18745.17			---	5930	18745	---	---
TRC				---	---			---	---	---	---	---
Ammonia Nitrogen				---	---			---	---	---	---	---
Organic Nitrogen				---	---			---	---	---	---	---
Nitrate Nitrogen				---	---			---	---	---	---	---

Calculation Summary of Metal and Cyanide Toxic Limits

(*1)	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Old Avg lbs/day	(*8) Tech Old Max 0=no scr. 1=OldvsGL 2=Old+GL lbs/day	(*9) Anti-Back	(*10) Out. 101 Avg lbs/day	(*11) Out. 101 Max lbs/day	(*12) Out. 101 Avg mg/L	(*13) Out. 101 Max mg/L
METALS AND CYANIDE												
Total Chromium				---	---			---	---	---	---	---
Total Copper	1.45	3.38	1.14733	13.87466	32.34231			---	13.87	32.34	---	---
Total Lead				---	---			---	---	---	---	---
Total Nickel				---	---			---	---	---	---	---
Total Zinc				---	---			---	---	---	---	---
Total Mercury				---	---			---	---	---	---	---
Total Cyanide				---	---			---	---	---	---	---
Amenable Cyanide				---	---			---	---	---	---	---
				---	---			---	---	---	---	---
				---	---			---	---	---	---	---
				---	---			---	---	---	---	---

Calculation of Technology Based Limits for Shintech Plaquemine

Out. 101

Calculation of Toxic Limits, OCPSF Subpart 1

TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF Parameter	G/L Val	G/L Val	Process	G/L Val	G/L Val	Tech Old	Tech Old	G/L-BPJ	Out. 101	Out. 101	Out. 101	Out. 101
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max0=no scr.		Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day1=OldvsGL		lbs/day	lbs/day	mg/L	mg/L
							2=Old+GL					
VOLATILE COMPOUNDS												
Acrylonitrile	0.096	0.242	3.05563	2.44646	6.167117			---	2.45	6.17	---	---
Benzene	0.037	0.136	3.05563	0.942906	3.465818			---	0.94	3.47	---	---
Carbon Tetrachloride	0.018	0.038	3.05563	0.458711	0.96839			---	0.46	0.97	---	---
Chlorobenzene	0.015	0.028	3.05563	0.382259	0.713551			---	0.38	0.71	---	---
Chloroethane	0.104	0.268	3.05563	2.650331	6.8297			---	2.65	6.83	---	---
Chloroform	0.021	0.046	3.05563	0.535163	1.172262			---	0.54	1.17	---	---
1,1-Dichloroethane	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
1,2-Dichloroethane	0.068	0.211	3.05563	1.732909	5.377114			---	1.73	5.38	---	---
1,1-Dichloroethylene	0.016	0.025	3.05563	0.407743	0.637099			---	0.41	0.64	---	---
1,2-trans-Dichloro-ethylene	0.021	0.054	3.05563	0.535163	1.376134			---	0.54	1.38	---	---
1,2-Dichloropropane	0.153	0.23	3.05563	3.899045	5.861309			---	3.90	5.86	---	---
1,3-Dichloropropylene	0.029	0.044	3.05563	0.739035	1.121294			---	0.74	1.12	---	---
Ethylbenzene	0.032	0.108	3.05563	0.815487	2.752267			---	0.82	2.75	---	---
Methyl Chloride	0.086	0.19	3.05563	2.19162	4.841951			---	2.19	4.84	---	---
Methylene Chloride	0.04	0.089	3.05563	1.019358	2.268072			---	1.02	2.27	---	---
Tetrachloroethylene	0.022	0.056	3.05563	0.560647	1.427101			---	0.56	1.43	---	---
Toluene.	0.026	0.08	3.05563	0.662583	2.038716			---	0.66	2.04	---	---
1,1,1-Trichloroethane	0.021	0.054	3.05563	0.535163	1.376134			---	0.54	1.38	---	---
1,1,2-Trichloroethane	0.021	0.054	3.05563	0.535163	1.376134			---	0.54	1.38	---	---
Trichloroethylene	0.021	0.054	3.05563	0.535163	1.376134			---	0.54	1.38	---	---
Vinyl Chloride	0.104	0.268	3.05563	2.650331	6.8297			---	2.65	6.83	---	---
ACID COMPOUNDS												
2-Chlorophenol	0.031	0.098	3.05563	0.790003	2.497428			---	0.79	2.50	---	---
2,4-Dichlorophenol	0.039	0.112	3.05563	0.993874	2.854203			---	0.99	2.85	---	---
2,4-Dimethylphenol	0.018	0.036	3.05563	0.458711	0.917422			---	0.46	0.92	---	---
4,6-Dinitro-o-cresol	0.078	0.277	3.05563	1.987748	7.059055			---	1.99	7.06	---	---
2,4-Dinitrophenol	0.071	0.123	3.05563	1.809361	3.134526			---	1.81	3.13	---	---
2-Nitrophenol	0.041	0.069	3.05563	1.044842	1.758393			---	1.04	1.76	---	---
4-Nitrophenol	0.072	0.124	3.05563	1.834845	3.16001			---	1.83	3.16	---	---
Phenol	0.015	0.026	3.05563	0.382259	0.662583			---	0.38	0.66	---	---

Calculation of Technology Based Limits for Shintech Plaquemine

Out. 101

Calculation of Toxic Limits, OCPSF Subpart I

TABLE 5

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF Parameter	G/L Val	G/L Val	Process	G/L Val	G/L Val	Tech Old	Tech Old	Anti-Back	Out. 101	Out. 101	Out. 101	Out. 101
Subpart I	Avg.	Max	Flow	Avg	Max	Avg	Max	0=no scr.	Avg	Max	Avg	Max
	mg/L	mg/L	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day	1=OldvsGL	lbs/day	lbs/day	mg/L	mg/L
								2=Old+GL				
BASE/NEUTRAL COMPOUNDS												
Acenaphthene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Acenaphthylene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Anthracene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Benzo(a)anthracene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Benzo(a)pyrene	0.023	0.061	3.05563	0.586131	1.554521			---	0.59	1.55	---	---
3,4-Benzofluoranthene	0.023	0.061	3.05563	0.586131	1.554521			---	0.59	1.55	---	---
Benzo(k)fluoranthene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Bis(2-ethylhexyl)-phthalate	0.103	0.279	3.05563	2.624847	7.110023			---	2.62	7.11	---	---
Chrysene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
1,2-Dichlorobenzene	0.077	0.163	3.05563	1.962264	4.153885			---	1.96	4.15	---	---
1,3-Dichlorobenzene	0.031	0.044	3.05563	0.790003	1.121294			---	0.79	1.12	---	---
1,4-Dichlorobenzene	0.015	0.028	3.05563	0.382259	0.713551			---	0.38	0.71	---	---
Diethyl phthalate	0.081	0.203	3.05563	2.0642	5.173243			---	2.06	5.17	---	---
Dimethyl phthalate	0.019	0.047	3.05563	0.484195	1.197746			---	0.48	1.20	---	---
Di-n-butyl phthalate	0.027	0.057	3.05563	0.688067	1.452585			---	0.69	1.45	---	---
2,4-Dinitrotoluene	0.113	0.285	3.05563	2.879687	7.262927			---	2.88	7.26	---	---
2,6-Dinitrotoluene	0.255	0.641	3.05563	6.498408	16.33521			---	6.50	16.34	---	---
Fluoranthene	0.025	0.068	3.05563	0.637099	1.732909			---	0.64	1.73	---	---
Fluorene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Hexachlorobenzene	0.015	0.028	3.05563	0.382259	0.713551			---	0.38	0.71	---	---
Hexachlorobutadiene	0.02	0.049	3.05563	0.509679	1.248714			---	0.51	1.25	---	---
Hexachloroethane	0.021	0.054	3.05563	0.535163	1.376134			---	0.54	1.38	---	---
Naphthalene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Nitrobenzene	0.027	0.068	3.05563	0.688067	1.732909			---	0.69	1.73	---	---
Phenanthrene	0.022	0.059	3.05563	0.560647	1.503553			---	0.56	1.50	---	---
Pyrene	0.025	0.067	3.05563	0.637099	1.707425			---	0.64	1.71	---	---
1,2,4-Trichlorobenzene	0.068	0.14	3.05563	1.732909	3.567754			---	1.73	3.57	---	---

05/10/2005 Calculation of Technology Based Limits for Shintech Plaquemine (application not submitted, production figs

(*1) TABLE 1

Permittee:	Shintech Plaquemine (application not submitted, production figs. from St. James)
Permit Number:	LA0120529, AI126578
Appendix	Appendix A-2
[] Flow Basis 1=proc, 0=all	0
Concentration flow, (MGD)	---
GL vs Old, 0=n, 1=y, 2=GL+Old	1
Outfall number	Out. 301
Deepwell fract., 40 CFR 122.50	

(*2)

PROCESS FLOW CALCULATION:	MGD	gpm
TOTAL PROCESS FLOW:	---	---
BOD5/TSS BPJ ALLOCATION FLOWS:	MGD	gpm
SANITARY WW:		
MISCELLANEOUS:	MGD	gpm
TOTAL MISCELLANEOUS FLOWS:	---	---
UTILITY WASTEWATER:	MGD	gpm
TOTAL UTILITY WW FLOWS:	---	---
TOTAL OCPSF+BPJ FLOW:	---	---

(*3) Fraction of OCPSF Conc. or BPJ []

Fract =0, []=1	0 BOD,avg	BOD,max	TSS,avg	TSS,max
Miscellaneous WW	0.5	0.5	0.5	0.5
Misc. WW, mg/L	5	10	10	20
Utility WW	0.25	0.25	0.25	0.25
Utility WW, mg/L	5	10	10	20
Sanitary, mg/L	30	45	30	45

(*4)

Metal+CN Flows:	MGD	gpm
Total Chromium		
Total Copper		
Total Lead		
Total Nickel		
Total Zinc		
Total Cyanide		

(*5)

OCPSF Guideline Subpart:	Prod. 1000 lbs per day	Prod. Fraction of Total
B, Rayon Fibers		---
C, Other Fibers		---
D,Thermoplastic Resins		---
E,Thermosetting Resins		---
F, Commodity Organics		---
G, Bulk Organics		---
H, Specialty Organics		---
Total:	---	---

(*6)

COD & TOC Ratios:	Average	Maximum
COD/BOD5 ratio		
TOC/BOD5 ratio		
COD,TOC, O&G []:	Average	Maximum
COD, mg/L		
TOC, mg/L		
O&G, mg/L		

(*7)

INORGANIC GUIDELINES:

New Source 1=y 0=n	1 Prod.			OCPSF BOD5	
0 Fraction=0, []=1	0 1000 lbs	Flow	Flow	OCPSF Fraction	
40 CFR 415	per day	MGD	gpm	Avg	Max
40 CFR 415.65 Mercury				1	1
40 CFR 415.65 Diaphragm[*1]	2970	1.5183		1	1
				1	1

[*1] 40 CFR 415.65 is being used on a BPJ basis for Shintech's chlorine production process.

Conversion Factors:

Conv mg/L-->lbs/da	8.34
Conv ug/L-->mg/L:	0.0001
Conv gpm-->MGD:	0.00144

(*8)

OCPSF Alternate Flows:	MGD
Conventionals:	
Organic Toxics:	---
Process Waste Water	
Process Stormwater	

(*9) Page and Table Numbering

	1=y, 0=n
1st Input Page	1
2nd Input Page	0
OCPSF	0
SS Metals	0
Inorganic	1
Fertilizer	0
Pesticides	0
COD/TOC/O&G Tbl	0
BOD/TSS Tbl	1
Table Designation Sequence	
Pesticides &OCPSF	0
PestMetal 1=y,0=n	0

Flow (*10)

MGD	COD and TOC limits, precalc	
---	COD,Avg (lbs/day)	0
---	COD,Max (lbs/day)	0
---	TOC,Avg (lbs/day)	0
	TOC,Max (lbs/day)	0

OCPSF+Inorganic 1.5183

Calculation of Technology Based Limits for Shintech Plaquemine (application not submitted, production figs

Out. 301

Conventional pollutant loading calculations, BOD5 and TSS

TABLE 2

Calculation of BOD5, and TSS limits:

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
OCPSF GL 40 CFR 414 Subpart:	BOD5 Avg mg/L	BOD5 Max mg/L	TSS Avg mg/L	TSS Max mg/L	Prod. 1000 lbs per day	Prod. Fraction of Total	Process Flow (MGD)	Conv. Factor	BOD5 Avg lbs/day	BOD5 Max lbs/day	TSS Avg lbs/day	TSS Max lbs/day
B, Rayon Fibers							---	8.34	---	---	---	---
C, Other Fibers							---	8.34	---	---	---	---
D,Thermoplastic Resins							---	8.34	---	---	---	---
E,Thermosetting Resins							---	8.34	---	---	---	---
F, Commodity Organics							---	8.34	---	---	---	---
G, Bulk Organics							---	8.34	---	---	---	---
H, Specialty Organics							---	8.34	---	---	---	---
Total/Weighted[]	---	---	---	---			---	8.34	---	---	---	---
BPJ Sources/Guidelines	BOD5 Avg	BOD5 Max	TSS Avg	TSS Max				Conv.	BOD5 Avg	BOD5 Max	TSS Avg	TSS Max
BPJ Sources:	mg/L	mg/L	mg/L	mg/L			Flow (MGD)	Factor	lbs/day	lbs/day	lbs/day	lbs/day
Sanitary WW:							---	8.34	---	---	---	---
Miscellaneous:							---	8.34	---	---	---	---
Utility Wastewater:							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
							---	8.34	---	---	---	---
BPJ Source Total:							---		---	---	---	---
Other Guidelines;	BOD5	BOD5	TSS	TSS	Prod.	Flow to		Conv.	BOD5	BOD5	TSS	TSS
Inorganic	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow	Factor	Avg	Max	Avg	Max
40 CFR 415	mg/L	mg/L	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
Chlor-Alkali Diaph			0.51	1.1	2970	---	---	8.34	---	---	1514.7	3267
					---	---	---	8.34	---	---	---	---
					---	---	---	8.34	---	---	---	---
[*1] 40 CFR 415.65 is					---	---	---	8.34	---	---	---	---
	BOD5	BOD5	TSS	TSS	Prod.	Flow to			BOD5	BOD5	TSS	TSS
	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow		Avg	Max	Avg	Max
	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction	(MGD)		lbs/day	lbs/day	lbs/day	lbs/day
					---	---	---		---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
Other Guideline Total (lbs/day)							---		---	---	1514.7	3267
BOD5/TSS Grand Total (lbs/day)							---		---	---	1514.7	3267

Calculation of Technology Based Limits for Shintech Plaquemine (application not submitted, production figs

Out. 301

Toxic pollutant loading calculations, heavy metals, TRC, and Cyanide

TABLE 3

40 CFR 414 OCPSF, 40 CFR 415, and 40 CFR 455 as applicable

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
Subcategory and/or Source	Chromium Avg mg/L	Chromium Max mg/L	Copper Avg mg/L	Copper Max mg/L	Prod. 1000 lbs per day	Flow to Tmt. Fraction	Chromium Flow (MGD)	Copper Flow (MGD)	Chromium Avg lbs/day	Chromium Max lbs/day	Copper Avg lbs/day	Copper Max lbs/day
OCPSF Subpart I •BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Inorganic Guidelines:	Avg lbs/1000	Max lbs/1000	Avg lbs/1000	Max lbs/1000								
					---	---			---	---	---	---
Chlor-Alkali, Diaph.			0.0049	0.012	2970	---			---	---	14.553	35.64
					---	---			---	---	---	---
					---	---			---	---	---	---
Total							---	---	---	---	14.553	35.64

Subcategory and/or Source	Lead Avg mg/L	Lead Max mg/L	Nickel Avg mg/L	Nickel Max mg/L	Prod. 1000 lbs per day	Flow to Tmt. Fraction	Lead Flow (MGD)	Nickel Flow (MGD)	Lead Avg lbs/day	Lead Max lbs/day	Nickel Avg lbs/day	Nickel Max lbs/day
OCPSF Subpart I •BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Inorganic Guidelines:	Avg lbs/1000	Max lbs/1000	Avg lbs/1000	Max lbs/1000								
					---	---			---	---	---	---
Chlor-Alkali, Diaph.	0.0019	0.0047	0.0037	0.0097	2970	---			5.643	13.959	10.989	28.809
					---	---			---	---	---	---
					---	---			---	---	---	---
Total							---	---	5.643	13.959	10.989	28.809

Subcategory and/or Source	Zinc Avg mg/L	Zinc Max mg/L	Cyanide Avg mg/L	Cyanide Max mg/L	Prod. 1000 lbs per day	Flow to Tmt. Fraction	Zinc Flow (MGD)	Cyanide Flow (MGD)	Zinc Avg lbs/day	Zinc Max lbs/day	Cyanide Avg lbs/day	Cyanide Max lbs/day
OCPSF Subpart I •BPJ							---	---	---	---	---	---
							---	---	---	---	---	---
							---	---	---	---	---	---
Inorganic Guidelines:	Avg lbs/1000	Max lbs/1000	Avg lbs/1000	Max lbs/1000								
					---	---			---	---	---	---
Chlor-Alkali, Diaph.					---	---			---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
Total							---	---	---	---	---	---

Calculation of Technology Based Limits for Shintech Plaquemine (application not submitted, production figs

Out. 301

Toxic pollutant loading calculations, heavy metals, TRC, and Cyanide

TABLE 3

40 CFR 415 and 40 CFR 455 as applicable

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)	(*12)	(*13)
Subcategory	TRC	TRC	Mercury	Mercury	Prod.	Flow to	TRC	Mercury	TRC	TRC	Mercury	Mercury
	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow	Flow	Avg	Max	Avg	Max
Inorganic Guidelines:	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction	(MGD)	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day
					---	---			---	---	---	---
Chlor-Alkali,Diaph.	0.0079	0.013			2970	---			23.463	38.61	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
Other Sources, BPJ	Avg	Max	Avg	Max					Avg	Max	Avg	Max
(Flow Based)	mg/L	mg/L	mg/L	mg/L					lbs/day	lbs/day	lbs/day	lbs/day
							---		---	---	---	---
							---		---	---	---	---
							---		---	---	---	---
Total							---		23.463	38.61	---	---

Subcategory	Cyanide A	Cyanide A			Prod.	Flow to	Cyanide A		Cyanide A	Cyanide A		
	Avg	Max	Avg	Max	1000 lbs	Tmt. Plt.	Flow	Flow	Avg	Max	Avg	Max
Inorganic Guidelines:	lbs/1000	lbs/1000	lbs/1000	lbs/1000	per day	Fraction	(MGD)	(MGD)	lbs/day	lbs/day	lbs/day	lbs/day
					---	---			---	---	---	---
Chlor-Alkali,Diaph.					---	---			---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
					---	---			---	---	---	---
Other Sources, BPJ	Avg	Max	Avg	Max					Avg	Max	Avg	Max
(Flow Based)	mg/L	mg/L	mg/L	mg/L					lbs/day	lbs/day	lbs/day	lbs/day
							---		---	---	---	---
							---		---	---	---	---
							---		---	---	---	---
Total							---		---	---	---	---

Calculation of Technology Based Limits for Shintech Plaquemine (application not submitted, production figs

Out. 301

TABLE 4

Calculation Summary of Conventional and Non-Conventional Limits

(*1) Parameter	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Old Avg lbs/day	(*8) Tech Old Anti-Back Max 0=no scr. 1=Old vs GL 2=Old+GL	(*9) Out. 301 Avg lbs/day	(*10) Out. 301 Max lbs/day	(*11) Out. 301 Avg mg/L	(*12) Out. 301 Max mg/L
CONVENTIONAL											
BOD5				---	---		---	---	---	---	---
TSS				1514.7	3267		---	1515	3267	---	---
Oil and Grease				---	---		---	---	---	---	---
NON-CONVENTIONAL											
COD				---	---		---	---	---	---	---
TOC				---	---		---	---	---	---	---
TRC				23.463	38.61		---	23.5	38.6	---	---
Ammonia Nitrogen				---	---		---	---	---	---	---
Organic Nitrogen				---	---		---	---	---	---	---
Nitrate Nitrogen				---	---		---	---	---	---	---

Calculation Summary of Metal and Cyanide Toxic Limits

(*1)	(*2) G/L-BPJ Avg. mg/L	(*3) G/L-BPJ Max mg/L	(*4) Process Flow (MGD)	(*5) G/L-BPJ Avg lbs/day	(*6) G/L-BPJ Max lbs/day	(*7) Tech Old Avg lbs/day	(*8) Tech Old Anti-Back Max 0=no scr. 1=Old vs GL 2=Old+GL	(*9) Out. 301 Avg lbs/day	(*10) Out. 301 Max lbs/day	(*11) Out. 301 Avg mg/L	(*12) Out. 301 Max mg/L
METALS AND CYANIDE											
Total Chromium				---	---		---	---	---	---	---
Total Copper				14.553	35.64		---	14.55	35.64	---	---
Total Lead				5.643	13.959		---	5.64	13.96	---	---
Total Nickel				10.989	28.809		---	10.99	28.81	---	---
Total Zinc				---	---		---	---	---	---	---
Total Mercury				---	---		---	---	---	---	---
Total Cyanide				---	---		---	---	---	---	---
Amenable Cyanide				---	---		---	---	---	---	---
				---	---		---	---	---	---	---

APPENDIX A-3 LA0120529, AI No. 126578

Documentation and Explanation of Technology Calculations
and Associated Lotus Spreadsheet

This is a multi-sector technology spreadsheet covering the following two guidelines: 40 CFR 414, Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) at Outfall 101, 40 CFR 415.62 and 40 CFR 415.65/ Chlor-Alkali Subcategory of Subpart F of the Inorganic Chemical Guidelines at Outfall 301 on a BPJ basis. Regulations at 40 CFR 144(a)/LAC 33.IX.2707 require that technology-based permit limitations be placed in permits based on effluent limitations guidelines where applicable, on Best Professional Judgement (BPJ) in the absence of guidelines or on a combination of the two. Best Available Technology Economically Achievable (BAT) guideline factors and concentrations are used for non-conventional and toxic pollutants. In the absence of BAT, Best Conventional Pollutant Control Technology (BCT) is used for non-conventional pollutants. In the absence of either BAT or BCT, Best Practicable Control Technology (BPT) is used for conventional and non-conventional pollutants. BPT is used for conventional pollutants. New Source Performance Standards (NSPS) are used as the situation dictates, however in the case of the OCPSF guidelines, NSPS=BAT. In the absence of an applicable guideline for a particular parameter, BPJ shall be utilized. The term, "monthly average" or "average", refers to the 30-day monthly average of daily maximum values, "daily maximum" or "maximum", refers to the maximum for any one day. The term, "previous permit", refers to the most recently issued NPDES or LPDES permit. If the previous permit did not give a BPJ allowance for particular wastewater, none will be granted in the reissuance in accordance with CWA 402(o), and 40 CFR 122.44.l/LAC 33.IX.2707.L. The spreadsheet is set up in a table and column/section format. Each table represents a general category for data input or calculation points. Each reference column or section is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*10). These columns or sections represent inputs, existing data sets, calculation points, or results for determining technology based limits for an effluent of concern.

Table 1, Appendix A-1 and Appendix A-2

Table 1 is the data input area for the OCPSF guidelines and the inorganic chemical guidelines, Sections (*2), (*3), (*4), (*5), (*6), (*7), (*8), (*10), and (*11). The Page and Table numbering sequence section is Section (*9) and the generalized input information is Section (*1).

(*1) General input information:

Permittee - permittee name.

Permit Number- LPDES permit number.

Appendix- Appendix designation for the header.

[] Flow Basis 1=proc, 0=all- if the flow basis for concentration limits is the same as the process flow in determining mass limits, then a "1" is placed in the designated cell. A "0" indicates the total outfall

flow will be used in determining concentration based limits. See Concentration flow (MGD).

Concentration flow (MGD)- flow used for calculating concentration based limits in MGD.

GL vs Old, 0=n, 1=y, 2=GL+Old- this is the anti-backsliding (40 CFR 122.44.l, LAC 33.IX.2707.L) screening designation switch. "Old" represents the previous permit limit established by Best Professional Judgement (BPJ), which is now BAT for that facility, and "GL" represents the current guideline calculation. If the screen indicates that the previously established limitation is more stringent, but there has been an increase in production, another spreadsheet can be run giving guideline allowances for the production increase by putting a "2" in the specified cell. This cell sets a default for all anti-backsliding throughout the spreadsheet, but different options can be selected on a parameter specific basis.

Outfall number- Outfall number is placed in the designated cell, the default is "Out. 001", abbreviated due to space limitations in other portions of the spreadsheet.

Deepwell fract., 40 CFR 122.50/LAC 33:IX.2717- this applies to any situation where a discharger that falls under mass based guidelines or mass based BPJ and is discharging a portion of their wastewater to a surface water receiving stream and the remaining portion to a deepwell (most common in La.), POTW, offsite disposal, etc. The facility's mass based limitations must be reduced by the fraction of water not being discharged to the surface water receiving the discharge. Flow based guideline effluent limitations and associated BPJ will receive adjustments in their source flows.

(*2) OCPSF Flow Calculations- OCPSF flow calculations are divided into four basic categories, 1) process, 2) sanitary wastewater, 3) miscellaneous flows, and 4) utility wastewater. Additional flows may be entered as needed. Flows can either be entered as MGD or gpm units in the designated column. The process flow is used to calculate organic toxic limitations if the facility's annual production exceeds 5 million pounds per year of final product. Process flow includes flows generated by the manufacturing process, process area stormwater, and process lab water as stated in 40 CFR 414. Other flows, such as groundwater remediation wastewater, are considered as process wastewaters on a BPJ basis. Additional flows such as utility, sanitary, and miscellaneous wastewaters are used in determining additional BPJ allocations for BOD_5 and TSS limitations, but not toxics. Miscellaneous wastewater includes, but is not limited to, wastewaters from tank farms or chemical storage areas or uncontaminated stormwater. Utility wastewater includes, but is not limited to, non-contact cooling tower blowdown, boiler blowdown, filter backwash, etc.

(*3) Fraction of OCPSF Conc. or BPJ []. Utility, Miscellaneous and other wastewaters contribute BOD_5 and TSS loadings to the process outfall if these wastewaters are discharged through the process outfall. For miscellaneous wastewaters, a BPJ determination has been made that these wastewaters receive 50% of the production weighted OCPSF concentrations for BOD_5 and TSS. For utility wastewaters, a BPJ determination has been made that these wastewaters receive 25% of the production weighted OCPSF concentrations for BOD_5 and TSS. Sanitary wastewaters shall receive BOD_5 and TSS allocations of 30 mg/L, average, and 45 mg/L, maximum, as treatment equivalent to secondary treatment (LAC 33.IX.711.D). Other wastewaters shall be approached on a case-by-case basis. Anti-backsliding concerns and/or a previous permit may preclude the usage of the weighted OCPSF concentrations described above. Different BOD_5 and TSS fractions may be used as the situation dictates. If the previous permit contains other concentrations, they may be utilized instead of fractions of production weighted OCPSF concentrations.

(*4) Metal+CN Flow- The OCPSF guidelines specify that only a specific metal bearing wastestream shall receive allowances under the guideline (40 CFR 414.90, 414.100). However, through experience, it has been determined that there are several other potential sources of metals through out a facility other than from a catalyst in a metal bearing wastestream especially in an acidic wastestream. Examples of these sources include reaction vessels and equipment, piping, cooling towers, boilers, raw contaminants, etc. In consideration of these factors, the whole toxics process flow is utilized per BPJ in the calculation of metal limits unless anti-backsliding concerns (40 CFR 122.44.l, LAC 33.IX.2707.L) and/or a previous permit prescribe the use of a lesser flow. For situations where site-specific metal bearing flows (BPJ and OCPSF guideline) need to be calculated, the "Site-Specific Metal, Cyanide, and Total Residual Chlorine (TRC) Bearing Flows" table is used. Flow is entered in MGD or gpm under the specified column on the row(s) containing the metal(s) of concern.

(*5) OCPSF Guideline Subpart- BOD_5 and TSS mass limitations are calculated using a production weighted concentration. Organic chemical production figures in 1000/lbs day or production fractions of the total may be entered on the row(s) with the indicated subpart under the designated column. The production fraction will be used more frequently as many companies consider production information confidential. If a facility manufactures under only one subpart, then the production fraction shall be unity (1).

(*6) COD & TOC Ratios/COD, TOC, O&G []- Under the ratio section, it may be necessary to determine COD or TOC BPJ loadings based on BOD_5 limitations or loadings. The appropriate ratios are entered in the indicated cells. BPJ loadings for COD, TOC, and Oil and Grease (O&G) may also be determined on a concentration basis. Concentrations and flows are entered in the indicated cells. The ratios/concentrations are usually based on the previously issued permit, if one exists. If this is a new

permit issuance or major modification involving a new unit, then the ratios/concentrations are usually based on similarly permitted facilities.

(*7) Inorganic Effluent Guidelines (40 CFR 415)- Inorganic guideline subpart and associated production and flow are entered as indicated. Chlor-Alkali guidelines (40 CFR 415.63) are present by default since chlor-alkali operations are most frequently associated with the production of organic chemicals (chlorinated solvents, vinyl chloride monomer, etc.). New sources are indicated by placing a "1" or a "0" in the indicated cell. O Fraction=0, [1=1, indicates whether the BPJ BOD_5 allocation fraction is entered in terms of weighted OCPSF concentrations, indicated by a "0", or other concentration under the labeled columns, indicated by a "1". Production information is entered in terms of 1000 lbs per day. Flow is entered in MGD or gpm in the appropriate column. Other inorganic guideline input information is included on a case-by-case basis.

(*8) OCPSF Alternate Flows- On a case-by-case basis it may be necessary to utilize an alternate flow for the calculation of the conventional pollutants BOD_5 and TSS loadings or the calculation of the organic toxic loadings. This will most commonly occur in cases where a deepwell is being eliminated. Units are in MGD.

(*9) Page and Table numbering sequence- This section shall be used for all guideline calculations and combinations. The user can specify that the spreadsheet number the pages and tables in accordance with the guidelines/tables being used. Unused pages and tables are numbered "0". This section also controls the printing of the spreadsheet; non-numbered pages are not printed.

(*10) Precalculated COD and TOC limits- Occasionally it may be necessary to incorporate a precalculated technology-based limit for TOC or COD based on DMR's or other sources, such as a previously issued permit. These values are entered in the designated cells.

(*11) Inorganic Flow Sources- Although flow is not used in calculating mass limits under the inorganic effluent guidelines, these flows are sometimes used in allocating BPJ loadings or for informational purposes.

Table 2, Appendix A-1 and Appendix A-2

Table 2 is a calculation table for the conventional pollutant loadings of BOD_5 and TSS utilizing guidelines and BPJ.

(*1) The top portion of the table lists OCPSF subparts under 40 CFR 414. The bottom portion indicated by "Other Sources/Guidelines" lists non-guideline BPJ sources, sanitary wastewater, non-process area stormwater,

miscellaneous wastewaters, utility wastewaters, under "Other Sources" and other contributing guidelines under "Other Guidelines".

(*2) Average BOD_5- Average BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic allocations are made by BPJ.

(*3) Maximum BOD_5- Maximum BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic allocations are made by BPJ.

(*4) Average TSS- Average BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic wastewater TSS limitations are calculated in accordance with 40 CFR 415, which are mass based effluent guidelines.

(*5) Maximum TSS- Maximum BPT guideline concentrations in mg/L, lbs/1000 lbs of daily production, or BPJ concentrations in mg/L. Inorganic wastewater TSS limitations are calculated in accordance with 40 CFR 415, which are mass based effluent guidelines.

(*6) Production in 1000 lbs/day- These values indicate the amount of production per subpart.

(*7) At the top of the table, Production fraction of total. These values are based on a fraction of total OCPSF production per subpart. If all OCPSF manufacturing falls under one subpart, the fraction shall be unity (1).

At the bottom of the table, Flow to Treatment Plant Fraction. Applicable to mass-based guidelines; if a portion of a process wastewater is being injected to a deepwell, POTW, or other non-surface water source, this represents the remaining fraction being discharged to the receiving water.

(*8) Flow- For the OCPSF guideline portion of the table (the upper portion), this is the process flow calculated in Table 1. Under "BPJ Sources/Guidelines", these are the other categorical BPJ flows calculated in Table 1. Under the "Other Guideline" section, this is the flow associated with the production under that guideline part or subpart. Flows associated with mass-based guidelines are not used in calculations.

(*9) Conversion factor- used in conjunction with flow (MGD) for converting mg/L to lbs per day, 8.34 lbs/gallon. Mg/L is assumed to be equivalent to ppm.

(*10) BOD_5, Average, lbs/day- For OCPSF guideline allocations the concentration in column (*2) is multiplied by the production fraction in column (*7), the flow in column (*8), the conversion factor in column

(*9) yielding a monthly average BOD_5 loading applicable to that subpart. BPJ Source allocations are determined similarly to the OCPSF guideline allocations. If mass-based guidelines are being considered under Other Guidelines", the guideline factor in column (*2) is multiplied by the production value in (*6), and the flow to treatment plant fraction in column (*7) if there is deepwell, POTW, or other disposal of process wastewater not to a surface water receiving stream. Inorganic wastewaters receive a BOD_5 allocation provided that anti-backsliding does not apply. The OCPSF guideline loadings are summed on the row with the label, "Total/Weighted[]." The BPJ Sources loadings including the OCPSF BPJ loadings are summed on the row labeled, "BPJ Source Total". Other Guideline contributions are summed on the line labeled "Other Guideline Total (lbs/day)". The grand total is on the indicated row and this is the technology limit for Monthly Average BOD_5.

(*11) BOD_5, Maximum, lbs/day- Similar to column (*10). See column (*10).

(*12) TSS, Average, lbs/day- For OCPSF guideline allocations the concentration in column (*4) is multiplied by the production fraction in column (*7), the flow in column (*8), the conversion factor in column (*9) yielding a monthly average BOD_5 loading applicable to that subpart. BPJ Source allocations are determined similarly to the OCPSF guideline allocations. If mass-based guidelines are being considered under Other Guidelines", the guideline factor in column (*4) is multiplied by the production value in (*6), and the flow to treatment plant fraction in column (*7) if there is deepwell, POTW, or other disposal of process wastewater not to a surface water receiving stream. The OCPSF guideline loadings are summed on the row with the label, "Total/Weighted[]." The BPJ Sources loadings including the OCPSF BPJ loadings are summed on the row labeled, "BPJ Source Total". Other Guideline contributions are summed on the line labeled "Other Guideline Total (lbs/day)". The grand total is on the indicated row and this is the technology limit for Monthly Average TSS.

(*13) TSS, Maximum, lbs/day- Similar to column (*12). See column (*12).

Table 3, Appendix A-1

Table 3 for Appendix A-1 is a calculation table for the guideline and BPJ pollutant loadings of COD, TOC, and Oil and Grease.

(*1) Lists applicable guideline subparts, and sources that contribute COD, TOC, and Oil and Grease loading.

(*2) Average COD or O&G guideline factor (lbs/1000 lbs daily production), BPJ or guideline concentration (mg/L), COD to BOD_5 ratio, and Average O&G BPJ concentration (mg/L). COD to BOD_5 ratios or concentrations are calculated in the following order of precedence: 1) from the previously issued NPDES permit with BOD_5 and COD, 2) from the previously issued Louisiana Water Discharge Permit System (LWDPS) permit with BOD_5 and

COD, 3) from the application. BPJ Oil and Grease concentration(s) are calculated utilizing the principles of mass balance, flow, and mass loadings from the previously issued NPDES permit.

(*3) Maximum COD or O&G guideline factor (lbs/1000 lbs daily production), BPJ or guideline concentration (mg/L), COD to BOD_5 ratio, and Maximum O&G BPJ concentration (mg/L). See discussion for column (*2).

(*4) Average TOC guideline factor (lbs/1000 lbs daily production), BPJ or guideline concentration (mg/L), and TOC to BOD_5 ratio. TOC to BOD_5 ratios and TOC concentrations are calculated in the following order of precedence: 1) from the previously issued NPDES permit with BOD_5 and TOC, 2) from the previously issued Louisiana Water Discharge Permit System (LWDPS) permit with BOD_5 and TOC, 3) from the application.

(*5) Maximum TOC guideline factor (lbs/1000 lbs daily production), BPJ or guideline concentration (mg/L), or TOC to BOD_5 ratio. See discussion for column (*4).

(*6) Production in 1000 lbs/day/BOD_5 limit, Average- Indicates amount of production per guideline subpart. Under the ratio section, BOD_5 limit, Average, this is a previously calculated average BOD_5 limit.

(*7) Flow to Treatment Plant Fraction/COD Flow, MGD/BOD_5 limit, Maximum/O&G Flow, MGD- If a facility with mass-based guidelines is discharging a portion of their wastewater to a deepwell, POTW, or other source that is not the receiving water(s), the fraction discharged to the surface receiving water(s) is placed in this column for mass-based limit calculation. Under the BPJ Source(s) or Flow based Guidelines section, COD Flow, MGD, is entered in the indicated cell. Under the ratio section, BOD_5 limit, Maximum, this is a previously calculated maximum BOD_5 limit. Under the BPJ Source(s) Oil and Grease (O&G) section, O&G Flow, MGD, is entered in the indicated cell.

(*8) TOC Flow, MGD - Under the BPJ Source(s) or Flow based Guidelines section, TOC Flow, MGD is entered in the indicated cell.

(*9) Conversion factor used in conjunction with flow (MGD) for converting mg/L to lbs per day, 8.34 lbs/gallon. Mg/L is assumed to be equivalent to ppm.

(*10) Average COD or O&G loading per source indicated on the specified row in lbs/day. Under the mass-based guideline section, this is calculated by multiplying the process factor in column (*2) by the daily production value in column (*6), and the flow to treatment plant fraction in column (*7) if process wastewater is being discharged to a deepwell, POTW, or other non-surface water means. Under BPJ Sources or Flow based Guidelines or the BPJ Source(s) Oil and Grease (O&G) sections, loadings are determined by multiplying the concentration specified in column (*2) by the flow in column (*7) and the conversion factor in column (*9).

Total COD limits applicable to the permitted outfall are found on the row labeled, "COD/TOC Total (lbs/day)". Total Oil and Grease loadings are specified on the row labeled, "O&G Total (lbs/day)".

(*11) Maximum COD or O&G loading. Similar to column (*10). See description for column (*10).

(*12) Average TOC loading. Similar to column (*10). See description for column (*10).

(*13) Maximum TOC loading. Similar to column (*10). See description for column (*10).

Table 3, Appendix A-2

Table 3 for Appendix A-2 includes calculations for the heavy metals, Total Chromium, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Cyanide, Total Mercury, Total Residual Chlorine (TRC), and Amenable Cyanide utilizing BAT, NSPS, or BPJ as indicated.

(*1) Subcategory and/or Source- This specifies the applicable guideline subpart, subcategory, or BPJ source. When site-specific OCPSF metal limits are being calculated, the categorical source will be displayed: process wastewater, miscellaneous and utility wastewater, and non-ocpsf wastewater.

(*2) Average (parameter) guideline factor (lbs/1000 lbs daily production), or BPJ concentration (mg/L). Parameter is the indicated metal, cyanide, or TRC. BPJ concentrations for TRC are usually 0.9 mg/L, average, from the Inorganic Chemicals Development Document (Phase I) pg. 183, EPA 440/1-82/007, associated with chlor-alkali production.

(*3) Maximum (parameter) guideline factor (lbs/1000 lbs daily production), BPJ concentration (mg/L). Parameter is the indicated metal, cyanide, or TRC. BPJ concentrations for TRC are usually 1.5 mg/L, maximum, from the Inorganic Chemicals Development Document (Phase I) pg. 183, EPA 440/1-82/007, associated with chlor-alkali production.

(*4) Same as (*2).

(*5) Same as (*3).

(*6) Production in 1000 lbs/day- Applicable to mass based effluent guidelines, these values indicate the amount of production in 1000 lbs/day.

(*7) Flow to Treatment Plant Fraction- If a facility with mass-based guidelines is discharging a portion of their wastewater to a deepwell, POTW, or other source that is not the receiving water(s), the remaining

fraction discharged to the surface receiving water(s) is placed in this column for mass-based limit calculation.

(*8) Parameter flow in MGD- This flow is associated with the parameter specified in columns (*2) and (*3) and is used in determining flow based loadings.

(*9) Parameter flow in MGD- This flow is associated with the parameter specified in columns (*4) and (*5) and is used in determining flow based loadings.

(*10) Average guideline subcategory/subpart or source quantity allowance in lbs/day for specified parameter. For concentration-based guidelines/BPJ, this is determined by multiplying the concentration specified in column (*2) times the flow specified in column (*8) times the conversion factor 8.34. For mass-based guidelines the guideline process factor in column (*2) is multiplied times the daily production value specified in column (*6) and the flow to treatment plant fraction in column (*7) if process wastewater is being discharged to a deepwell, POTW, or other non-surface water means.

(*11) Maximum guideline subcategory/subpart or source quantity allowance in lbs/day for specified parameter. For concentration-based guidelines/BPJ, this is determined by multiplying the concentration specified in column (*3) times the flow specified in column (*8) times the conversion factor 8.34. For mass-based guidelines the guideline process factor in column (*3) is multiplied times the daily production value specified in column (*6) and the flow to treatment plant fraction in column (*7) if process wastewater is being discharged to a deepwell, POTW, or other non-surface water means.

(*12) Similar to column (*10). See description for (*10).

(*13) Similar to column (*11). See description for (*11).

Table 4, Appendix A-1 and Appendix A-2

This table is a calculation summary table for Conventional, Non-Conventional, and Toxic limits. If there is one consolidated OCPSF metal bearing waste stream per metal and this is the only metal source, then the guideline concentrations in columns (*2) (Daily Average) and (*3) (Daily Maximum) are multiplied times the flow in column (*4) times the conversion factor of 8.34 to yield daily average and daily maximum guideline loadings in lbs/day in columns (*5) and (*6), respectively.

(*1) Parameter- The parameters are organized into three groups, Conventional, Non-Conventional, and Metals and Cyanide.

(*2) Average guideline/BPJ value- Guideline or BPJ value in terms of concentration, mg/L. If there are multiple sources/allocations for the

listed metals/cyanide, these values will not be indicated in this column. Single or consolidated metal/cyanide bearing waste streams (OCPSF only) will have values indicated in this column. Values will not be indicated for the conventional and non-conventional pollutants listed.

(*3) Maximum guideline/BPJ value- Guideline or BPJ value in terms of concentration, mg/L. If there are multiple sources/allocations for the listed metals/cyanide, these values will not be indicated in this column. Single or consolidated metal/cyanide bearing waste streams (OCPSF only) will have values indicated in this column. Values will not be indicated for the conventional and non-conventional pollutants listed.

(*4) Process flow in MGD- Similar to columns (*2) and (*3), this column will be left blank unless there is one consolidated metal/cyanide bearing waste stream.

(*5) Average Guideline/BPJ effluent limitation in lbs/day. Except for the metal/cyanide situation discussed in column (*2), these values are calculated in other tables and summarized in this column.

(*6) Maximum Guideline/BPJ effluent limitation in lbs/day. Similar to column (*5).

(*7) Average Tech Old in lbs/day- This column is utilized when an anti-backsliding concern (CWA 402(o), 40 CFR 122.44.1, LAC 33.IX.2707.L) is present. This would be indicated by significantly higher limits (≈10% or greater) calculated under guidelines than those previously established in the previous permit on a BPJ basis (now achievable technology, if the permittee is meeting the limits) before guideline issuance. If the previously issued permit (as applicable) contains limits for the parameter of concern and an anti-backsliding concern is present, the limits from the previously issued permit are placed in this column in lbs/day.

(*8) Maximum Tech Old in lbs/day- Similar to (*7).

(*9) Antiback, 0=no scr., 1=OldvsGL, 2=Old+GL- Anti-Backsliding screening switch. The default is set under section (*1) in Table 1. If a screen is conducted, a "1" will appear in this column. The more stringent permit limits will appear in columns (*10) and (*11). If the screen indicates that the previously issued permit limit utilizing BPJ-Tech is more stringent and an increase in production has occurred, the technology based limits can be recalculated by running the spreadsheet a second time using guidelines for the increase only. This will be indicated by a "2" in this column. The recalculated guideline limitations in columns (*4) and (*5) are subsequently added to the values in columns (*7) and (*8) yielding technology-based effluent

limitations in columns (*10) and (*11). The values in this column can be changed on a row-by-row basis for site-specific screening situations.

(*10) Average technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*5). When anti-backsliding screening is used, see discussion for column (*9).

(*11) Maximum technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*6). When anti-backsliding screening is used, see discussion for column (*9).

(*12) Average technology based effluent limit in mg/L- A concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*10). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

(*13) Maximum technology based effluent limit in mg/L- Similar to column (*11), a concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*11). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

Table 5, Appendix A-1

Table 5 calculates the organic toxic technology effluent limitations based on BAT/NSPS established in the OCPSF guidelines, Subpart I or J as indicated. The column designations are very similar to those used for the summary table for Conventional pollutants, Non-Conventional pollutants, and Metals and Cyanide.

(*1) Parameter. The parameters are organized into three groups, Volatile Compounds, Acid Compounds, and Base/Neutral Compounds.

(*2) Average guideline value (BAT/NSPS) in terms of concentration in mg/L.

(*3) Maximum guideline value (BAT/NSPS) in terms of concentration in mg/L.

(*4) OCPSF process flow in MGD.

(*5) Average guideline limit in lbs/day- Calculated by multiplying the guideline concentration in column (*2) times the flow in column (*4) times the conversion factor of 8.34.

(*6) Maximum guideline limit in lbs/day- Calculated by multiplying the guideline concentration in column (*3) times the flow in column (*4) times the conversion factor of 8.34. Similar to column (*5).

(*7) Average Tech Old in lbs/day- This column is utilized when an anti-backsliding concern (CWA 402(o), 40 CFR 122.44.l, LAC 33.IX.2707.L) is present. This would be indicated by significantly higher limits (≈10% or greater) calculated under guidelines than those previously established in the previous permit on a BPJ basis (now achievable technology, if the permittee is meeting the limits) before guideline issuance. If the previously issued permit (as applicable) contains limits for the parameter of concern and an anti-backsliding concern is present, the limits from the previously issued permit are placed in this column in lbs/day.

(*8) Maximum Tech Old in lbs/day- Similar to (*7).

(*9) Antiback, 0=no scr., 1=OldvsGL, 2=Old+GL- Anti-Backsliding screening switch. The default is set under section (*1) in Table 1. If a screen is conducted, a "1" will appear in this column. The more stringent permit limits will appear in columns (*10) and (*11). If the screen indicates that the previously issued permit limit utilizing BPJ-Technology is more stringent and an increase in production has occurred, the technology based limits can be recalculated by running the spreadsheet a second time using guidelines for the increase only. This will be indicated by a "2" in this column. The recalculated guideline limitations in columns (*4) and (*5) are subsequently added to the values in columns (*7) and (*8) yielding technology-based effluent limitations in columns (*10) and (*11). The values in this column can be changed on a row-by-row basis for site-specific screening situations.

(*10) Average technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*5). When anti-backsliding screening is used, see discussion for column (*9).

(*11) Maximum technology based effluent limit in lbs/day- If no anti-backsliding screening is conducted then the value in this column will be equal to the value in column (*6). When anti-backsliding screening is used, see discussion for column (*9).

(*12) Daily Average technology based effluent limit in mg/L- A concentration limit can be calculated using the specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*10). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

(*13) Daily Maximum technology based effluent limit in mg/L- Similar to column (*11), a concentration limit can be calculated using the

specified concentration flow from section (*1) in Table 1 and the mass limitation calculated under column (*11). The formula is as follows:

$$\frac{\text{effluent limit, lbs/day}}{\text{flow, MGD} * 8.34}$$

Appendix B

Developer: Bruce Fielding Time: 02:37 PM Shintech Plaquemine
Software: Lotus 4.0 LA012059, AI126578
Revision date: 03/02/01

Total Loading for Outfalls 101 and 301

Input variables:

Permittee	Shintech Plaquemine
Permit Number=	LA012059, AI126578
Outfalls to be summed:	Outfall#:Flow, MGD:
Outfall	101
Outfall	301
Outfall	N/A
Outfall list	101 and 301

Page Numbering/Labeling

Appendix	Appendix B-1
Page Numbers 1=y, 0=n	1
Input Page # 1=y, 0=n	1

Documentation:

This is a simple spreadsheet used for summing the total loadings from up to three outfalls for the purpose of water quality screening. Technology limits and/or end-of-pipe measurements are added for a total facility loading. Calculation columns are indicated with an asterisk and number enclosed by paretheses. For example, (*1) or (*9). The term "N/A" will appear in column headers if there are less than 3 outfalls being summed.

Explanation of column calculations:

(*1) Parameter being screened
(*2) Monthly average technology or effluent value in mass units of lbs/day.
(*3) Daily maximum technology or effluent value in mass units of lbs/day.
(*4) Similar to column (*2). See explanation for column (*2).
(*5) Similar to column (*3). See explanation for column (*3).
(*6) Similar to column (*2). See explanation for column (*2).
(*7) Similar to column (*3). See explanation for column (*3).
(*8) Sum of daily averages in columns (*2), (*4), and (*6).
(*9) Sum of daily maximums in columns (*3), (*5), and (*7).

Total Loading for Outfalls 101 and 301

LA012059, AI126578

(*1) Toxic Parameters	(*2) Outfall 101 (Avg) lbs/day	(*3) Outfall 101 (Max) lbs/day	(*4) Outfall 301 (Avg) lbs/day	(*5) Outfall 301 (Max) lbs/day	(*6) Outfall N/A (Avg) lbs/day	(*7) Outfall N/A (Max) lbs/day	(*8) Total Loading (Avg) lbs/day	(*9) Total Loading (Max) lbs/day
NONCONVENTIONAL								
Total Phenols (4AAP)							---	---
3-Chlorophenol							---	---
4-Chlorophenol							---	---
2,3-Dichlorophenol							---	---
2,5-Dichlorophenol							---	---
2,6-Dichlorophenol							---	---
3,4-Dichlorophenol							---	---
2,4-Dichlorophenocy-acetic acid (2,4-D)							---	---
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)							---	---
METALS AND CYANIDE								
Total Arsenic							---	---
Total Cadmium							---	---
Chromium III			---	---			---	---
Chromium VI			---	---			---	---
Total Copper	13.87466	32.34231	14.553	35.64			28.42766	67.982315
Total Lead			5.643	13.959			5.643	13.959000
Total Mercury			---	---			---	---
Total Nickel			10.989	28.809			10.989	28.809000
Total Zinc			---	---			---	---
Total Cyanide			---	---			---	---
DIOXIN								
2,3,7,8 TCDD; dioxin							---	---
VOLATILE COMPOUNDS								
Benzene	0.942906	3.465818	---	---			0.942906	3.465818
Bromoform							---	---
Bromodichloromethane			---	---			---	---
Carbon Tetrachloride	0.458711	0.96839	---	---			0.458711	0.968390
Chloroform	0.535163	1.172262	---	---			0.535163	1.172262
Dibromochloromethane			---	---			---	---
1,2-Dichloroethane(EDC)	1.732909	5.377114	---	---			1.732909	5.377114
1,1-Dichloroethylene	0.407743	0.637099	---	---			0.407743	0.637099
1,3-Dichloropropylene	0.739035	1.121294	---	---			0.739035	1.121294
Ethylbenzene	0.815487	2.752267	---	---			0.815487	2.752267
Methyl Chloride	2.19162	4.841951	---	---			2.19162	4.841951
Methylene Chloride	1.019358	2.268072	---	---			1.019358	2.268072
1,1,2,2-Tetrachloro-ethane							---	---

Total Loading for Outfalls 101 and 301

LA012059, AI126578

(*1) Toxic Parameters	(*2) Outfall 101 (Avg) lbs/day	(*3) Outfall 101 (Max) lbs/day	(*4) Outfall 301 (Avg) lbs/day	(*5) Outfall 301 (Max) lbs/day	(*6) Outfall N/A (Avg) lbs/day	(*7) Outfall N/A (Max) lbs/day	(*8) Total Loading (Avg) lbs/day	(*9) Total Loading (Max) lbs/day
VOLATILE COMPOUNDS (cont'd)								
Tetrachloroethylene	0.560647	1.427101	---	---			0.560647	1.427101
Toluene	0.662583	2.038716	---	---			0.662583	2.038716
1,1,1-Trichloroethane	0.535163	1.376134	---	---			0.535163	1.376134
1,1,2-Trichloroethane	0.535163	1.376134	---	---			0.535163	1.376134
Trichloroethylene	0.535163	1.376134	---	---			0.535163	1.376134
Vinyl Chloride	2.650331	6.8297	---	---			2.650331	6.829700
ACID COMPOUNDS								
2-Chlorophenol	0.790003	2.497428	---	---			0.790003	2.497428
2,4-Dichlorophenol	0.993874	2.854203	---	---			0.993874	2.854203
BASE NEUTRAL COMPOUNDS								
Benzidine							---	---
Hexachlorobenzene	0.382259	0.713551	---	---			0.382259	0.713551
Hexachlorabutadiene	0.509679	1.248714	---	---			0.509679	1.248714
PESTICIDES								
Aldrin							---	---
Hexachlorocyclohexane (gamma BHC, Lindane)							---	---
Chlordane							---	---
4,4'-DDT							---	---
4,4'-DDE							---	---
4,4'-DDD							---	---
Dieldrin							---	---
Endosulfan							---	---
Endrin							---	---
Heptachlor							---	---

Toxaphene							---	---
Other Parameters:								
Fecal Colif. (col/100ml)							---	---
Chlorine							---	---
Ammonia							---	---
Chlorides							---	---
Sulfates							---	---
TDS							---	---
							---	---
							---	---
							---	---

APPENDIX B-3 0120529, AI No. 126578

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Mississippi River
Critical Flow, Qrc (cfs)[*1]: 141,955, adjusted flow: 73,564
Harmonic Mean Flow, Qrh (cfs)[*1]: 366,748, adjusted flow: 190,055
Segment No.: 070301
Receiving Stream Hardness (mg/L): 153
Receiving Stream TSS (mg/L): 32
MZ Stream Factor, Fs: 1/3
Plume distance, Pf: N/A

[*1] Both the critical flow and the harmonic mean of the Mississippi River have been divided between Georgia Gulf (LA0007129, AI2455) and Shintech Plaquemine (LA0120529, AI126578) on a flow weighted basis. This was done since Shintech and Georgia Gulf have similar waste streams and a relatively short distance between their discharge points. Georgia Gulf will receive a reduced critical flow and harmonic mean upon their next permit issuance.

Effluent Characteristics:

Company: Shintech Plaquemine
Facility flow, Qe (MGD): 8.46303 (Outfalls 001 and 002)
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0120529

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Developer: Bruce Fielding Time: 10:53 AM

Software: Lotus 4.0 LA0120529, AI12658

Revision date: 02/14/05

Water Quality Screen for Shintech Louisiana LLC/Plaquemine PVC Plant

Input variables:

Receiving Water Characteristics:	0.518218	Dilution:		Toxicity Dilution Series:	
		ZID Fs =	0.033333	Biomonitoring dilution:	0.005337
Receiving Water Name=	Mississippi River, Segment 070301			Dilution Series Factor:	0.75
Crit. flow (Qr) cfs [*1]=	141955 73563.6	MZ Fs =	0.333333		
Harm. mean [*1]=	366748 190055.3	Critical Qr (MGD)=	47544.16		Percent Effluent
Drinking Water=1 HHNPCR=2	1	Harm. Mean (MGD)=	122832.8	Dilution No. 1	0.712%
Marine, 1=y, 0=n		ZID Dilution =	0.005312	Dilution No. 2	0.5337%
Rec. Water Hardness=	153	MZ Dilution =	0.000534	Dilution No. 3	0.4003%
Rec. Water TSS=	32	HHnc Dilution=	0.000178	Dilution No. 4	0.3002%
Fisch/Specific=1,Stream=0		HHc Dilution=	0.000069	Dilution No. 5	0.2252%
Diffuser Ratio=		ZID Upstream =	187.2622		
		MZ Upstream =	1872.622	Partition Coefficients; Dissolved-->Total	
Effluent Characteristics:		MZhhnc Upstream=	5617.865		
Permittee=	Shintech Louisiana LLC/Plaquemine PVC Plant			METALS	FW
Permit Number=	LA0120529, AI12658			Total Arsenic	2.223578
Facility flow (Qef),MGD=	8.46303	MZhhc Upstream=	14514.04	Total Cadmium	3.549121
		ZID Hardness=	---	Chromium III	5.282524
Outfall Number =	001&002	MZ Hardness=	---	Chromium VI	1
Eff. data, 2=lbs/day	2	ZID TSS=	---	Total Copper	3.56078
MQL, 2=lbs/day	1	MZ TSS=	---	Total Lead	6.6
Effluent Hardness=	N/A	Multipliers:		Total Mercury	2.785159
Effluent TSS=	N/A	WLAa --> LTAa	0.32	Total Nickel	3.174756
WQBL ind. 0=y, 1=n		WLAc --> LTAc	0.53	Total Zinc	4.535534
Acute/Chr. ratio 0=n, 1=y	1	LTA a,c-->WQBL avg	1.31		
Aquatic,acute only1=y,0=n		LTA a,c-->WQBL max	3.11	Aquatic Life, Dissolved	
		LTA h --> WQBL max	2.38	Metal Criteria, ug/L	
Page Numbering/Labeling		WQBL-limit/report	2.13	METALS	ACUTE CHRONIC
Appendix	Appendix B-1	WLA Fraction	1	Arsenic	339.8 150
Page Numbers 1=y, 0=n	1	WQBL Fraction	1	Cadmium	50.41446 1.411599
Input Page # 1=y, 0=n	1			Chromium III	777.3694 252.1706
		Conversions:		Chromium VI	15.712 10.582
Fischer/Site Specific inputs:		ug/L-->lbs/day Qef	0.070582	Copper	27.50744 17.6668
Pipe=1,Canal=2,Specific=3		ug/L-->lbs/day Qeo	0	Lead	102.28 3.985703
Pipe width, feet		ug/L-->lbs/day Qr	1183.905	Mercury	1.734 0.012
ZID plume dist., feet		lbs/day-->ug/L Qeo	14.16798	Nickel	2028.29 225.2579
MZ plume dist., feet		lbs/day-->ug/L Qef	14.16798	Zinc	164.0948 149.8435
HHnc plume dist., feet		diss-->tot 1=y0=n	1		
HHc plume dist., feet		Cu diss->tot1=y0=n	1	Site Specific Multiplier Values:	
		cfs-->MGD	0.6463	CV =	---
Fischer/site specific dilutions:				N =	---
F/specific ZID Dilution =	---	Receiving Stream:		WLAa --> LTAa	---
F/specific MZ Dilution =	---	Default Hardness=	25	WLAc --> LTAc	---
F/specific HHnc Dilution=	---	Default TSS=	10	LTA a,c-->WQBL avg	---
F/specific HHc Dilution=	---	99 Crit., 1=y, 0=n	1	LTA a,c-->WQBL max	---
				LTA h --> WQBL max	---

[*1] Critical flow and harmonic mean have been divided between Shintech, Plaquemine Plant (LA0120529, AI126578) and Georgia Gulf (LA0007129, AI2455) on a flow weighted basis.

(*1) Toxic Parameters	(*2) Instream Conc. ug/L	(*3) CuEffluent /Tech (Avg) lbs/day	(*4) Effluent /Tech (Max) lbs/day	(*5) MQL ug/L	(*6) Effluent 1=No 0=95 %	(*7) 95th % estimate Non-Tech lbs/day	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHDW ug/L	(*11) HH Carcinogen Indicator "C"
NONCONVENTIONAL										
Total Phenols (4AAP)		---	---	5			700	350	5	
3-Chlorophenol		---	---	10					0.1	
4-Chlorophenol		---	---	10			383	192	0.1	
2,3-Dichlorophenol		---	---	10					0.04	
2,5-Dichlorophenol		---	---	10					0.5	
2,6-Dichlorophenol		---	---	10					0.2	
3,4-Dichlorophenol		---	---	10					0.3	
2,4-Dichlorophenocy-acetic acid (2,4-D)		---	---	---					100	
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)		---	---	---					10	
METALS AND CYANIDE										
Total Arsenic		---	---	10			755.5719	333.5367	111.1789	
Total Cadmium		---	---	1			178.927	5.009936	35.49121	
Chromium III		---	---	10			4106.472	1332.097	264.1262	
Chromium VI		---	---	10			15.712	10.582	50	C
Total Copper	21.74561	52.74835		10	1		97.94796	62.9076	3560.78	
Total Lead	6.7678	16.7414		5	1		675.0477	26.30564	330	
Total Mercury		---	---	0.2			4.829466	0.033422	5.570319	
Total Nickel	13.1794	34.5514		40	1		6439.327	715.1389		
Total Zinc		---	---	20			744.2576	679.6201	22677.67	
Total Cyanide		---	---	20			45.9	5.2	663.8	
DIOXIN										
2,3,7,8 TCDD; dioxin		---	---	1.0E-005					7.1E-007	C
VOLATILE COMPOUNDS										
Benzene	0.729961	2.683101		10	1		2249	1125	1.1	C
Bromoform		---	---	10			2930	1465	3.9	C
Bromodichloromethane		---	---	10					0.2	C
Carbon Tetrachloride	0.355116	0.74969		10	1		2730	1365	0.22	C
Chloroform	0.414302	0.90752		10	1		2890	1445	5.3	C
Dibromochloromethane		---	---	10					0.39	C
1,2-Dichloroethane	1.341551	4.162753		10	1		11800	5900	0.36	C
1,1-Dichloroethylene	0.315659	0.493217		10	1		1160	580	0.05	C
1,3-Dichloropropylene	0.572132	0.868062		10	1		606	303	9.86	
Ethylbenzene	0.631318	2.130698		10	1		3200	1600	2390	
Methyl Chloride	1.696667	3.748451		50	1		55000	27500		
Methylene Chloride	0.789147	1.755853		20	1		19300	9650	4.4	C
1,1,2,2-Tetrachloro-ethane		---	---	10			932	466	0.16	C

(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHDW	(*18) Limiting A,C,HH	(*19) WQBL Avg 001&002	(*20) WQBL Max 001&002	(*21) WQBL Avg 001&002	(*22) WQBL Max 001&002	(*23) Need WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	131783.5	655767.5	28094.32	42170.72	347556.8	28094.32	28094.32	28094.32	66864.49	1982.944	4719.407	no
3-Chlorophenol	---	---	561.8865	---	---	561.8865	561.8865	561.8865	1337.29	39.65889	94.38815	no
4-Chlorophenol	72104.41	359735.3	561.8865	23073.41	190659.7	561.8865	561.8865	561.8865	1337.29	39.65889	94.38815	no
2,3-Dichlorophenol	---	---	224.7546	---	---	224.7546	224.7546	224.7546	534.9159	15.86355	37.75526	no
2,5-Dichlorophenol	---	---	2809.432	---	---	2809.432	2809.432	2809.432	6686.449	198.2944	471.9407	no
2,6-Dichlorophenol	---	---	1123.773	---	---	1123.773	1123.773	1123.773	2674.58	79.31777	188.7763	no
3,4-Dichlorophenol	---	---	1685.659	---	---	1685.659	1685.659	1685.659	4011.869	118.9767	283.1644	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	561886.5	---	---	561886.5	561886.5	561886.5	1337290	39658.89	94388.15	no
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)	---	---	56188.65	---	---	56188.65	56188.65	56188.65	133729	3965.889	9438.815	no
METALS AND CYANIDE												
Total Arsenic	142245.6	624921.6	624699.3	45518.59	331208.5	624699.3	45518.59	59629.35	141562.8	4208.739	9991.74	no
Total Cadmium	33685.19	9386.723	199420.3	10779.26	4974.963	199420.3	4974.963	6517.202	15472.14	459.995	1092.049	no
Chromium III	773093.3	2495846	1484089	247389.8	1322798	1484089	247389.8	324080.7	769382.4	22874.16	54304.3	no
Chromium VI	2957.975	19826.66	725752	946.552	10508.13	725752	946.552	1239.983	2943.777	87.52008	207.7767	no
Total Copper	18439.89	117865	2E+007	5900.766	62468.47	2E+007	5900.766	7730.004	18351.38	545.5966	1295.271	no
Total Lead	127085.9	49286.81	1854225	40667.5	26122.01	1854225	26122.01	34219.83	81239.45	2415.293	5734.016	no
Total Mercury	909.2058	62.62002	31298.87	290.9458	33.18861	31298.87	33.18861	43.47708	103.2166	3.068685	7.285198	no
Total Nickel	1212282	1339900	---	387930.1	710146.8	---	387930.1	508188.4	1206463	35868.79	85154.15	no
Total Zinc	140115.5	1273351	1.3E+008	44836.97	674875.9	1.3E+008	44836.97	58736.44	139443	4145.716	9842.119	no
Total Cyanide	8641.233	9742.832	3729802	2765.195	5163.701	3729802	2765.195	3622.405	8599.755	255.6754	606.9851	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.010306	---	---	0.010306	0.010306	0.010306	0.024528	0.000727	0.001731	no
VOLATILE COMPOUNDS												
Benzene	423401.6	2107824	15966.54	135488.5	1117147	15966.54	15966.54	15966.54	38000.38	1126.945	2682.13	no
Bromoform	551608.1	2744856	56608.66	176514.6	1454773	56608.66	56608.66	56608.66	134728.6	3995.534	9509.37	no
Bromodichloromethane	---	---	2903.008	---	---	2903.008	2903.008	2903.008	6909.159	204.8992	487.66	no
Carbon Tetrachloride	513955.7	2557493	3193.309	164465.8	1355472	3193.309	3193.309	3193.309	7600.075	225.3891	536.426	no
Chloroform	544077.6	2707383	76929.72	174104.8	1434913	76929.72	76929.72	76929.72	183092.7	5429.828	12922.99	no
Dibromochloromethane	---	---	5660.866	---	---	5660.866	5660.866	5660.866	13472.86	399.5534	950.937	no
1,2-Dichloroethane	2221493	1.1E+007	5225.415	710877.9	5858815	5225.415	5225.415	5225.415	12436.49	368.8185	877.788	no
1,1-Dichloroethylene	218384.1	1086701	725.752	69882.91	575951.3	725.752	725.752	725.752	1727.29	51.22479	121.915	no
1,3-Dichloropropylene	114086.9	567707.3	55402.01	36507.8	300884.9	55402.01	36507.8	47825.21	113539.2	3375.584	8013.79	no
Ethylbenzene	602438.9	2997794	1.3E+007	192780.4	1588831	1.3E+007	192780.4	252542.4	599547.2	17824.86	42317.04	no
Methyl Chloride	1E+007	5.2E+007	---	3313414	2.7E+007	---	3313414	4340572	1E+007	306364.8	727324.2	no
Methylene Chloride	3633460	1.8E+007	63866.18	1162707	9582637	63866.18	63866.18	63866.18	152001.5	4507.782	10728.52	no
1,1,2,2-Tetrachloro-ethane	175460.3	873107.6	2322.406	56147.31	462747.1	2322.406	2322.406	2322.406	5527.327	163.9193	390.128	no

(*1) Toxic Parameters	(*2) Instream Conc. ug/L	(*3) CuEffluent /Tech (Avg) lbs/day	(*4) Effluent /Tech (Max) lbs/day	(*5) MQL ug/L	(*6) Effluent 1=No 0=95 %	(*7) 95th % estimate Non-Tech lbs/day	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHDW ug/L	(*11) HH Carcinogen Indicator "C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene		0.434031	1.104806	10	1		1290	645	0.65	C
Toluene		0.512946	1.578295	10	1		1270	635	6100	
1,1,1-Trichloroethane		0.414302	1.065349	10	1		5280	2640	200	
1,1,2-Trichloroethane		0.414302	1.065349	10	1		1800	900	0.56	C
Trichloroethylene		0.414302	1.065349	10	1		3900	1950	2.8	C
Vinyl Chloride		2.051783	5.287288	10	1				1.9	C
ACID COMPOUNDS										
2-Chlorophenol		0.611589	1.933411	10	1		258	129	0.1	
2,4-Dichlorophenol		0.769419	2.209613	10	1		202	101	0.3	
BASE NEUTRAL COMPOUNDS										
Benzidine		---	---	50			250	125	0.00008	C
Hexachlorobenzene		0.29593	0.552403	10	1				0.00025	C
Hexachlorabutadiene		0.394574	0.966706	10	1		5.1	1.02	0.09	C
PESTICIDES										
Aldrin		---	---	0.05			3		0.00004	C
Hexachlorocyclohexane (gamma BHC, Lindane)		---	---	0.05			5.3	0.21	0.11	C
Chlordane		---	---	0.2			2.4	0.0043	0.00019	C
4,4'-DDT		---	---	0.1			1.1	0.001	0.00019	C
4,4'-DDE		---	---	0.1			52.5	10.5	0.00019	C
4,4'-DDD		---	---	0.1			0.03	0.006	0.00027	C
Dieldrin		---	---	0.1			0.2374	0.0557	0.00005	C
Endosulfan		---	---	0.1			0.22	0.056	0.47	
Endrin		---	---	0.1			0.0864	0.0375	0.26	
Heptachlor		---	---	0.05			0.52	0.0038	0.00007	C
		---	---							
Toxaphene		---	---	5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Col.(col/100ml)		---	---							
Chlorine		---	---				19	11		
Ammonia		---	---					4000		
Chlorides		---	---							
Sulfates		---	---							
TDS		---	---							
		---	---							
		---	---							
		---	---							

(*1) Toxic Parameters	(*12) WLAa Acute ug/L	(*13) WLAc Chronic ug/L	(*14) WLAh HHDW ug/L	(*15) LTAa Acute ug/L	(*16) LTAc Chronic ug/L	(*17) LTAh HHDW ug/L	(*18) Limiting A,C,HH ug/L	(*19) WQBL Avg 001&002 ug/L	(*20) WQBL Max 001&002 ug/L	(*21) WQBL Avg 001&002 lbs/day	(*22) WQBL Max 001&002 lbs/day	(*23) Need WQBL?
Tetrachloroethylene	242858.2	1208486	9434.776	77714.62	640497.5	9434.776	9434.776	9434.776	22454.77	665.9223	1584.895	no
Toluene	239092.9	1189750	3.4E+007	76509.74	630567.3	3.4E+007	76509.74	100227.8	237945.3	7074.243	16794.58	no
1,1,1-Trichloroethane	994024.2	4946361	1123773	318087.7	2621571	1123773	318087.7	416694.9	989252.9	29411.02	69823.12	no
1,1,2-Trichloroethane	338871.9	1686259	8128.423	108439	893717.5	8128.423	8128.423	8128.423	19345.65	573.7177	1365.448	no
Trichloroethylene	734222.4	3653562	40642.11	234951.2	1936388	40642.11	40642.11	40642.11	96728.23	2868.588	6827.24	no
Vinyl Chloride	---	---	27578.58	---	---	27578.58	27578.58	27578.58	65637.01	1946.542	4632.77	no
ACID COMPOUNDS												
2-Chlorophenol	48571.64	241697.2	561.8865	15542.92	128099.5	561.8865	561.8865	561.8865	1337.29	39.65889	94.38815	no
2,4-Dichlorophenol	38028.96	189235.8	1685.659	12169.27	100295	1685.659	1685.659	1685.659	4011.869	118.9767	283.1644	no
BASE NEUTRAL COMPOUNDS												
Benzidine	47065.54	234202.7	1.161203	15060.97	124127.4	1.161203	1.161203	1.161203	2.763664	0.08196	0.195064	no
Hexachlorobenzene	---	---	3.62876	---	---	3.62876	3.62876	3.62876	8.636449	0.256124	0.609575	yes
Hexachlorabutadiene	960.137	1911.094	1306.354	307.2438	1012.88	1306.354	307.2438	402.4894	955.5283	28.40838	67.44279	no
PESTICIDES												
Aldrin	564.7865	---	0.580602	180.7317	---	0.580602	0.580602	0.580602	1.381832	0.04098	0.097532	no
Hexachlorocyclohexane (gamma BHC, Lindane)	997.7894	393.4605	1596.654	319.2926	208.5341	1596.654	208.5341	273.1796	648.541	19.28148	45.77511	no
Chlordane	451.8292	8.056573	2.757858	144.5853	4.269984	2.757858	2.757858	2.757858	6.563701	0.194654	0.463277	no
4,4'-DDT	207.0884	1.873622	2.757858	66.26828	0.993019	2.757858	0.993019	1.300855	3.08829	0.091817	0.217977	no
4,4'-DDE	9883.763	19673.03	2.757858	3162.804	10426.7	2.757858	2.757858	2.757858	6.563701	0.194654	0.463277	no
4,4'-DDD	5.647865	11.24173	3.919061	1.807317	5.958117	3.919061	1.807317	2.367585	5.620755	0.167108	0.396722	no
Dieldrin	44.69344	104.3607	0.725752	14.3019	55.31118	0.725752	0.725752	0.725752	1.72729	0.051225	0.121915	no
Endosulfan	41.41767	104.9228	2640.866	13.25366	55.60909	2640.866	13.25366	17.36229	41.21887	1.225459	2.909297	no
Endrin	16.26585	70.26081	1460.905	5.205072	37.23823	1460.905	5.205072	6.818644	16.18777	0.481271	1.14256	no
Heptachlor	97.89632	7.119762	1.016053	31.32682	3.773474	1.016053	1.016053	1.016053	2.418206	0.071715	0.170681	no
Toxaphene	137.4314	0.374724	3.48361	43.97804	0.198604	3.48361	0.198604	0.260171	0.617658	0.018363	0.043595	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	3576.981	20609.84	---	1144.634	10923.21	---	1144.634	1499.47	3559.811	105.8351	251.2574	no
Ammonia	---	7494486	---	---	3972078	---	3972078	5203422	1.2E+007	367266.2	871906.8	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX B-3 0120529, AI No. 126578

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Mississippi River
Critical Flow, Qrc (cfs)[*1]: 141,955, adjusted flow: 73,414
Harmonic Mean Flow, Qrh (cfs)[*1]: 366,748, adjusted flow: 189,668
Segment No.: 070301
Receiving Stream Hardness (mg/L): 153
Receiving Stream TSS (mg/L): 32
MZ Stream Factor, Fs: 1/3
Plume distance, Pf: N/A

[*1] Both the critical flow and the harmonic mean of the Mississippi River have been divided between Georgia Gulf (LA0007129, AI2455) and Shintech Plaquemine (LA0120529, AI126578) on a flow weighted basis. This was done since Shintech and Georgia Gulf have similar waste streams and a relatively short distance between their discharge points. Georgia Gulf will receive a reduced critical flow and harmonic mean upon their next permit issuance.

Effluent Characteristics:

Company: Shintech Plaquemine
Facility flow, Qe (MGD): 8.46303 (Outfalls 001 and 002)
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0120529

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ n^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ n^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$\text{WLA a,c,h} = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ n^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf*}{}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}*}{}$$

(2.8) Pw $P^{1/2}$ 2.38 $Pw^{1/2}$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for

Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.

Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting

Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

Appendix C

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 001					
Group A					
Biochemical Oxygen Demand (BOD)	61.0341085 mg/L	4259.228734 lbs/day	28.70899329 mg/L	1510.672612 lbs/day	BPJ
Chemical Oxygen Demand (COD)	295.870402 mg/L	20647.13891 lbs/day	98.83186711 mg/L	5200.551385 lbs/day	BPJ
Total Organic Carbon (TOC)	140.916967 mg/L	9833.806192 lbs/day	52.50711135 mg/L	2762.934048 lbs/day	BPJ
Total Suspended Solids (TSS)	87.6838013 mg/L	6118.961599 lbs/day	41.05026987 mg/L	2160.0729 lbs/day	BPJ
Flow	14.1376202 MGD	14.1376202 MGD	6.3053 MGD	6.3053 MGD	BPJ
Ammonia (as N)	5.76097136 mg/L	402.0259385 lbs/day	2.875035328 mg/L	151.2648982 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	95 °F	95 °F	BPJ
Temperature (Summer)	110 °F	110 °F	104 °F	104 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Acenaphthene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Acenaphthylene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Acrylonitrile	0.00070734 mg/L	0.049361399 lbs/day	0.000258411 mg/L	0.013597618 lbs/day	BPJ
Anthracene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Benzene	0.03890378 mg/L	2.71487696 lbs/day	0.00775232 mg/L	0.407928529 lbs/day	BPJ
Benzo(a)Anthracene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
3,4-Benzofluoranthene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Benzo(k)Fluoralhene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Benzo(a)Pyrene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Bis(2-ethylhexyl)Phthalate	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Carbon Tetrachloride	0.01131746 mg/L	0.789782388 lbs/day	0.003751059 mg/L	0.197381421 lbs/day	BPJ
Chlorobenzene	0.00495139 mg/L	0.345529795 lbs/day	0.002067285 mg/L	0.108780941 lbs/day	BPJ
Chloroethane	0.07568553 mg/L	5.281669723 lbs/day	0.011565098 mg/L	0.608557617 lbs/day	BPJ
Chloroform	0.01379316 mg/L	0.962547286 lbs/day	0.004901594 mg/L	0.257922805 lbs/day	BPJ
2-Chlorophenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Chrysene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Di-n-butyl Phthalate	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
1,2-Dichlorobenzene	0.029001 mg/L	2.02381737 lbs/day	0.010203117 mg/L	0.536889931 lbs/day	BPJ
1,3-Dichlorobenzene	0.00778076 mg/L	0.542975392 lbs/day	0.004134571 mg/L	0.217561882 lbs/day	BPJ
1,4-Dichlorobenzene	0.00495139 mg/L	0.345529795 lbs/day	0.002067285 mg/L	0.108780941 lbs/day	BPJ
1,1-Dichloroethane	0.01662252 mg/L	1.159992883 lbs/day	0.002899976 mg/L	0.152597307 lbs/day	BPJ
1,2-Dichloroethane	0.07073414 mg/L	4.936139928 lbs/day	0.008498978 mg/L	0.447217815 lbs/day	BPJ
1,1-Dichloroethylene	0.00707341 mg/L	0.493613993 lbs/day	0.002233429 mg/L	0.117523437 lbs/day	BPJ
1,2-trans-Dichloroethylene	0.01520784 mg/L	1.061270085 lbs/day	0.002766667 mg/L	0.145582533 lbs/day	BPJ
2,4-Dichlorophenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
1,2-Dichloropropane	0.04067213 mg/L	2.838280459 lbs/day	0.020272924 mg/L	1.066765089 lbs/day	BPJ
1,3-Dichloropropylene	0.00778076 mg/L	0.542975392 lbs/day	0.002500048 mg/L	0.131552985 lbs/day	BPJ
Diethyl Phthalate	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
2,4-Dimethylphenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Dimethyl Phthalate	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
4,6-Dinitro-o-Cresol	0.00884177 mg/L	0.617017491 lbs/day	0.003167583 mg/L	0.166678799 lbs/day	BPJ
2,4-Dinitrophenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
2,4-Dinitrotoluene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
2,6-Dinitrotoluene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Ethylbenzene	0.01909822 mg/L	1.332757781 lbs/day	0.004134571 mg/L	0.217561882 lbs/day	BPJ
Fluoranthene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Fluorene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Hexachlorobenzene	0.00106101 mg/L	0.074042099 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Hexachlorobutadiene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
2,3,7,8-Tetrachlorodibenzo-p-dioxin	7.073E-10 mg/L	4.936E-08 lbs/day	< 5.000E-10 mg/L	< 9.305E-09 lbs/day	BPJ
Hexachloroethane	0.01520784 mg/L	1.061270085 lbs/day	0.004518082 mg/L	0.237742343 lbs/day	BPJ
Methyl Chloride	0.03359872 mg/L	2.344666466 lbs/day	0.006232715 mg/L	0.327966657 lbs/day	BPJ
Methylene Chloride	0.01591518 mg/L	1.110631484 lbs/day	0.003166596 mg/L	0.166626855 lbs/day	BPJ
Naphthalene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Nitrobenzene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
2-Nitrophenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
4-Nitrophenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Phenanthrene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Phenol	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Pyrene	0.00176835 mg/L	0.123403498 lbs/day	0.000583476 mg/L	0.030702622 lbs/day	BPJ
Tetrachloroethylene	0.01591518 mg/L	1.110631484 lbs/day	0.002899976 mg/L	0.152597307 lbs/day	BPJ
Toluene	0.01414683 mg/L	0.987227986 lbs/day	0.003234238 mg/L	0.170186186 lbs/day	BPJ
Chromium, Total	0.11107783 mg/L	7.751499944 lbs/day	0.036580434 mg/L	1.924869274 lbs/day	BPJ
Copper, Total	0.71239886 mg/L	49.71432805 lbs/day	0.233477444 mg/L	12.28562688 lbs/day	BPJ
Cyanide, Total	0.00282937 mg/L	0.197445597 lbs/day	0.000533238 mg/L	0.028059096 lbs/day	BPJ
Lead, Total	1.97353268 mg/L	137.7217971 lbs/day	0.112753222 mg/L	5.933095685 lbs/day	BPJ
Nickel, Total	16.0507301 mg/L	1120.090591 lbs/day	7.376113463 mg/L	388.1324739 lbs/day	BPJ
Zinc, Total	7.3829877 mg/L	515.2173781 lbs/day	0.976174997 mg/L	51.36651143 lbs/day	BPJ
1,2,4-Trichlorobenzene	0.02475695 mg/L	1.727648975 lbs/day	0.004782727 mg/L	0.251668003 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 001					
1,1,1-Trichloroethane	0.01626885 mg/L	1.135312183 lbs/day	0.004651392 mg/L	0.244757117 lbs/day	BPJ
1,1,2-Trichloroethane	0.01520784 mg/L	1.061270085 lbs/day	0.002766667 mg/L	0.145582533 lbs/day	BPJ
Trichloroethylene	0.01520784 mg/L	1.061270085 lbs/day	0.004518082 mg/L	0.237742343 lbs/day	BPJ
Vinyl Chloride	0.03536707 mg/L	2.468069964 lbs/day	0.023574804 mg/L	1.240510605 lbs/day	BPJ
2,2-Bis(4-hydroxy phenyl) Propane	3.53670721 mg/L	246.8069964 lbs/day	1.251011054 mg/L	65.82843632 lbs/day	BPJ
Total Residual Chlorine	5.0325937 mg/L	351.1965398 lbs/day	2.038142764 mg/L	107.2474545 lbs/day	BPJ
Oil and Grease	< 21.9548056 mg/L	< 1532.102984 lbs/day	< 10.39599844 mg/L	< 547.039388 lbs/day	BPJ
Sulfide (as S)	34.2125109 mg/L	2387.499597 lbs/day	24.2578638 mg/L	1276.453343 lbs/day	BPJ
Surfactants	1.76835361 mg/L	123.4034982 lbs/day	0.532398716 mg/L	28.01492029 lbs/day	BPJ
Aluminum, Total	58.343979 mg/L	4071.499661 lbs/day	11.61818593 mg/L	611.3511228 lbs/day	BPJ
Iron, Total	15.4984159 mg/L	1081.547679 lbs/day	6.534940691 mg/L	343.8698049 lbs/day	BPJ
Phenols, Total	3.53670721 mg/L	246.8069964 lbs/day	1.253677245 mg/L	65.9687318 lbs/day	BPJ
Diethylamine	1.06101216 mg/L	74.04209892 lbs/day	0.250202211 mg/L	13.16568726 lbs/day	BPJ
α-Naphthoquinon	1.06101216 mg/L	74.04209892 lbs/day	0.250202211 mg/L	13.16568726 lbs/day	BPJ
Naphthoquinone	1.06101216 mg/L	74.04209892 lbs/day	0.250202211 mg/L	13.16568726 lbs/day	BPJ
Buthyl Hydroxy Toluene	3.53670721 mg/L	246.8069964 lbs/day	1.251011054 mg/L	65.82843632 lbs/day	BPJ
Fluoride	1.15217718 mg/L	80.40399501 lbs/day	0.426439903 mg/L	22.4393477 lbs/day	BPJ
Nitrate-Nitrite (as N)	17.0179463 mg/L	1187.5872 lbs/day	7.322872722 mg/L	385.3309362 lbs/day	BPJ
Phosphorus (as P), Total	43.0439745 mg/L	3003.797998 lbs/day	20.34671003 mg/L	1070.647698 lbs/day	BPJ
Sulfite (as SO3)	2115.7787 mg/L	147648.3504 lbs/day	144.694204 mg/L	7613.836153 lbs/day	BPJ
Sulfate (as SO4)	7564.54379 mg/L	527887.1615 lbs/day	2731.587319 mg/L	143736.6371 lbs/day	BPJ
Magnesium, Total	228.355659 mg/L	15935.66299 lbs/day	86.35399095 mg/L	4543.963201 lbs/day	BPJ
Bromoform	0.01414683 mg/L	0.987227986 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
Chlorodibromomethane	0.00353671 mg/L	0.246806996 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
Dichlorobromomethane	0.02122024 mg/L	1.480841978 lbs/day	0.000266619 mg/L	0.014029548 lbs/day	BPJ
Methylbromide	0.00353671 mg/L	0.246806996 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
1,1,2,2-Tetrachloroethane	0.01520784 mg/L	1.061270085 lbs/day	0.002266263 mg/L	0.119251158 lbs/day	BPJ
Boron, Total	0.03635291 mg/L	2.536866031 lbs/day	0.002938623 mg/L	0.154630897 lbs/day	BPJ
Cobalt, Total	0.4018829 mg/L	28.04515743 lbs/day	0.294871453 mg/L	15.51619114 lbs/day	BPJ
Molybdenum	4.42544115 mg/L	308.8267624 lbs/day	2.892023266 mg/L	152.1788067 lbs/day	BPJ
Manganese	2.94286617 mg/L	205.3661548 lbs/day	0.532528561 mg/L	28.02175275 lbs/day	BPJ
Barium, Total	16.8675417 mg/L	1177.091301 lbs/day	4.988310209 mg/L	262.4858188 lbs/day	BPJ
Chloride, Total	16085.3735 mg/L	1122508.164 lbs/day	12060.41938 mg/L	634621.5298 lbs/day	BPJ
Sodium, Total	10423.6544 mg/L	727408.4869 lbs/day	7812.811316 mg/L	411111.5968 lbs/day	BPJ
Calcium, Total	1208.47984 mg/L	84333.04262 lbs/day	326.0538204 mg/L	17157.01319 lbs/day	BPJ
Strontium, Total	5.81646551 mg/L	405.8985649 lbs/day	2.983832649 mg/L	157.0098336 lbs/day	BPJ
Sillica, Total	49.303103 mg/L	3440.587539 lbs/day	21.24213176 mg/L	1117.764957 lbs/day	BPJ
Bromide, Total	32.8280526 mg/L	2290.886004 lbs/day	15.21243837 mg/L	800.4813601 lbs/day	BPJ
Iodine, Total	0.71027992 mg/L	49.56645937 lbs/day	0.382020998 mg/L	20.10201658 lbs/day	BPJ
NaCl O3 (Sodium Chlorate)	1451.04036 mg/L	101259.9833 lbs/day	781.8997827 mg/L	41143.71323 lbs/day	BPJ
Antimony, Total	0.03635291 mg/L	2.536866031 lbs/day	0.002938623 mg/L	0.154630897 lbs/day	BPJ
Cadmium, Total	0.11372748 mg/L	7.936403966 lbs/day	0.037772529 mg/L	1.98759755 lbs/day	BPJ
Potassium, Total	1020.64172 mg/L	71224.87177 lbs/day	258.4482677 mg/L	13599.59632 lbs/day	BPJ
Silver, Total	0.00396877 mg/L	0.276958451 lbs/day	0.002688356 mg/L	0.141461821 lbs/day	BPJ
Tin, Total	0.03635291 mg/L	2.536866031 lbs/day	0.002938623 mg/L	0.154630897 lbs/day	BPJ
Titanium, Total	3.63458043 mg/L	253.6370203 lbs/day	0.269557741 mg/L	14.1841789 lbs/day	BPJ
Vanadium, Total	0.28991145 mg/L	20.231297 lbs/day	0.118416258 mg/L	6.23108571 lbs/day	BPJ
Acetate	4.43690229 mg/L	309.6265709 lbs/day	2.329373701 mg/L	122.5720811 lbs/day	BPJ
Amine	4.37724835 mg/L	305.4636563 lbs/day	2.263342585 mg/L	119.0975113 lbs/day	BPJ
Hexaphosphate	15.529158 mg/L	1083.692998 lbs/day	7.764579005 mg/L	408.5736036 lbs/day	BPJ
Hydroquinone	4.37724835 mg/L	305.4636563 lbs/day	2.263342585 mg/L	119.0975113 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	9.5946005 mg/L	669.553454 lbs/day	5.130768372 mg/L	269.9819941 lbs/day	BPJ
Acetaldehyde	0.01414683 mg/L	0.987227986 lbs/day	0.002666191 mg/L	0.14029548 lbs/day	BPJ
Total dissolved solids (TDS)	40419.5395 mg/L	2820653.371 lbs/day	24336.15457 mg/L	1280573.018 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 001 - Only Pollutants From Process					
Group A					
Biochemical Oxygen Demand (BOD)	54 mg/L	3751.15518 lbs/day	26 mg/L	1386.87716 lbs/day	BPJ
Chemical Oxygen Demand (COD)	130 mg/L	9100.01275 lbs/day	57 mg/L	3022.27929 lbs/day	BPJ
Total Organic Carbon (TOC)	114 mg/L	7986.26601 lbs/day	43 mg/L	2253.32794 lbs/day	BPJ
Total Suspended Solids (TSS)	85 mg/L	6118.9616 lbs/day	41 mg/L	2160.0729 lbs/day	BPJ
Flow	14.1376202 MGD	14.1376202 MGD	6.3053 MGD	6.3053 MGD	BPJ
Ammonia (as N)	6 mg/L	402.025938 lbs/day	3 mg/L	151.284898 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	95 °F	95 °F	BPJ
Temperature (Summer)	110 °F	110 °F	104 °F	104 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Acenaphthene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Acenaphthylene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Acrylonitrile	0.000707341 mg/L	0.0493614 lbs/day	0.000258411 mg/L	0.01359762 lbs/day	BPJ
Anthracene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Benzene	0.038903779 mg/L	2.71487696 lbs/day	0.00775232 mg/L	0.40792853 lbs/day	BPJ
Benzo(a)Anthracene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
3,4-Benzofluoranthene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Benzo(k)Fluorathene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Benzo(a)Pyrene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Bis(2-ethylhexyl)Phthalate	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Carbon Tetrachloride	0.011317463 mg/L	0.78978239 lbs/day	0.003751059 mg/L	0.19738142 lbs/day	BPJ
Chlorobenzene	0.00495139 mg/L	0.34552979 lbs/day	0.002067285 mg/L	0.10878094 lbs/day	BPJ
Chloroethane	0.075685534 mg/L	5.28166972 lbs/day	0.011565098 mg/L	0.60855762 lbs/day	BPJ
Chloroform	0.013793158 mg/L	0.96254729 lbs/day	0.004901594 mg/L	0.2579228 lbs/day	BPJ
2-Chlorophenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Chrysene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Di-n-bulyl Phthalate	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
1,2-Dichlorobenzene	0.029000999 mg/L	2.02381737 lbs/day	0.010203117 mg/L	0.53688993 lbs/day	BPJ
1,3-Dichlorobenzene	0.007780756 mg/L	0.54297539 lbs/day	0.004134571 mg/L	0.21756188 lbs/day	BPJ
1,4-Dichlorobenzene	0.00495139 mg/L	0.34552979 lbs/day	0.002067285 mg/L	0.10878094 lbs/day	BPJ
1,1-Dichloroethane	0.016622524 mg/L	1.15999288 lbs/day	0.002899976 mg/L	0.15259731 lbs/day	BPJ
1,2-Dichloroethane	0.070734144 mg/L	4.93613993 lbs/day	0.008498978 mg/L	0.44721781 lbs/day	BPJ
1,1-Dichloroethylene	0.007073414 mg/L	0.49361399 lbs/day	0.002233429 mg/L	0.11752344 lbs/day	BPJ
1,2-trans-Dichloroethylene	0.015207841 mg/L	1.06127008 lbs/day	0.002766667 mg/L	0.14556253 lbs/day	BPJ
2,4-Dichlorophenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
1,2-Dichloropropane	0.040672133 mg/L	2.83828046 lbs/day	0.020272924 mg/L	1.06676509 lbs/day	BPJ
1,3-Dichloropropylene	0.007780756 mg/L	0.54297539 lbs/day	0.002500048 mg/L	0.13155298 lbs/day	BPJ
Diethyl Phthalate	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
2,4-Dimethylphenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Dimethyl Phthalate	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
4,6-Dinitro-o-Cresol	0.008841768 mg/L	0.61701749 lbs/day	0.003167583 mg/L	0.1666788 lbs/day	BPJ
2,4-Dinitrophenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
2,4-Dinitrotoluene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
2,6-Dinitrotoluene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Ethylbenzene	0.019098219 mg/L	1.33275778 lbs/day	0.004134571 mg/L	0.21756188 lbs/day	BPJ
Fluoranthene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Fluorene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Hexachlorobenzene	0.001061012 mg/L	0.0740421 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Hexachlorobutadiene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
2,3,7,8-Tetrachlorodibenzo-p-dioxin	7.073E-10 mg/L	4.936E-08 lbs/day	< 5.000E-10 mg/L	< 9.305E-09 lbs/day	BPJ
Hexachloroethane	0.015207841 mg/L	1.06127008 lbs/day	0.004516082 µg/L	0.23774234 lbs/day	BPJ
Methyl Chloride	0.033598719 mg/L	2.34466647 lbs/day	0.006232715 µg/L	0.32796666 lbs/day	BPJ
Methylene Chloride	0.015915182 mg/L	1.11063148 lbs/day	0.003166596 µg/L	0.16662685 lbs/day	BPJ
Naphthalene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Nitrobenzene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
2-Nitrophenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
4-Nitrophenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Phenanthrene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Phenol	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Pyrene	0.001768354 mg/L	0.1234035 lbs/day	0.000583476 mg/L	0.03070262 lbs/day	BPJ
Tetrachloroethylene	0.015915182 mg/L	1.11063148 lbs/day	0.002899976 mg/L	0.15259731 lbs/day	BPJ
Toluene	0.014146829 mg/L	0.98722799 lbs/day	0.003234238 mg/L	0.17018619 lbs/day	BPJ
Chromium, Total	0.093761122 mg/L	6.54306376 lbs/day	0.020999265 mg/L	1.10498528 lbs/day	BPJ
Copper, Total	0.627546984 mg/L	43.7929907 lbs/day	0.224424785 mg/L	11.8092743 lbs/day	BPJ
Cyanide, Total	0.002829366 mg/L	0.1974456 lbs/day	0.000533238 mg/L	0.0280591 lbs/day	BPJ
Lead, Total	1.930240908 mg/L	134.700707 lbs/day	0.109169553 mg/L	5.74452237 lbs/day	BPJ
Nickel, Total	15.98146321 mg/L	1115.25685 lbs/day	7.371828642 mg/L	387.907006 lbs/day	BPJ
Zinc, Total	7.223673973 mg/L	504.099765 lbs/day	0.955265069 mg/L	50.2662271 lbs/day	BPJ
1,2,4-Trichlorobenzene	0.024756951 mg/L	1.72764897 lbs/day	0.004782727 mg/L	0.251668 lbs/day	BPJ
1,1,1-Trichloroethane	0.016268853 mg/L	1.13531218 lbs/day	0.004651392 mg/L	0.24475712 lbs/day	BPJ

Pollutant	Maximum		Average		
	Concentration	Mass	Concentration	Mass	Source
1,2-Trichloroethane	0.015207841 mg/L	1.06127008 lbs/day	0.002766667 mg/L	0.14556253 lbs/day	BPJ
Trichloroethylene	0.015207841 mg/L	1.06127008 lbs/day	0.004518082 mg/L	0.23774234 lbs/day	BPJ
Vinyl Chloride	0.035367072 mg/L	2.46806996 lbs/day	0.023574804 mg/L	1.24051061 lbs/day	BPJ
2,2-Bis(4-hydroxy phenyl) Propane	3.536707215 mg/L	246.806996 lbs/day	1.251011054 mg/L	65.8284363 lbs/day	BPJ
Total Residual Chlorine	5.032593704 mg/L	351.19654 lbs/day	2.038142764 mg/L	107.247455 lbs/day	BPJ
Oil and Grease	< 8.101438472 mg/L	< 565.354035 lbs/day	< 5.680726948 mg/L	< 298.920918 lbs/day	BPJ
Sulfide (as S)	34.21251087 mg/L	2387.4996 lbs/day	24.2578638 mg/L	1276.45334 lbs/day	BPJ
Surfactants	1.768353607 mg/L	123.403498 lbs/day	0.532398716 mg/L	28.0149203 lbs/day	BPJ
Aluminum, Total	58.32666233 mg/L	4070.29122 lbs/day	11.60260476 mg/L	610.531239 lbs/day	BPJ
Iron, Total	14.80574755 mg/L	1033.21023 lbs/day	6.488726946 mg/L	341.438029 lbs/day	BPJ
Phenols, Total	3.536707215 mg/L	246.806996 lbs/day	1.253677245 mg/L	65.9687318 lbs/day	BPJ
Diethylamine	1.061012164 mg/L	74.0420989 lbs/day	0.250202211 mg/L	13.1656873 lbs/day	BPJ
a-Naphthoquinon	1.061012164 mg/L	74.0420989 lbs/day	0.250202211 mg/L	13.1656873 lbs/day	BPJ
Naphthoquinone	1.061012164 mg/L	74.0420989 lbs/day	0.250202211 mg/L	13.1656873 lbs/day	BPJ
Buthyl Hydroxy Toluene	3.536707215 mg/L	246.806996 lbs/day	1.251011054 mg/L	65.8284363 lbs/day	BPJ
Fluoride	0.113174631 mg/L	7.89782388 lbs/day	0.021329529 mg/L	1.12236384 lbs/day	BPJ
Nitrate-Nitrite (as N)	14.42043995 mg/L	1006.32177 lbs/day	5.811499404 mg/L	305.802189 lbs/day	BPJ
Phosphorus (as P), Total	40.79280226 mg/L	2846.70129 lbs/day	20.0195055 mg/L	1053.43013 lbs/day	BPJ
Sulfite (as SO3)	2115.7787 mg/L	147648.35 lbs/day	144.694204 mg/L	7613.83615 lbs/day	BPJ
Sulfate (as SO4)	7412.156752 mg/L	517252.923 lbs/day	2657.561189 mg/L	139841.368 lbs/day	BPJ
Magnesium, Total	191.9905695 mg/L	13397.947 lbs/day	67.82798193 mg/L	3569.12113 lbs/day	BPJ
Bromoform	0.014146829 mg/L	0.98722799 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
Chlorodibromomethane	0.003536707 mg/L	0.246807 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
Dichlorobromomethane	0.021220243 mg/L	1.48084198 lbs/day	0.000266619 mg/L	0.01402955 lbs/day	BPJ
Methylbromide	0.003536707 mg/L	0.246807 lbs/day	0.000666548 mg/L	0.03507387 lbs/day	BPJ
1,1,2,2-Tetrachloroethane	0.015207841 mg/l	1.06127008 lbs/day	0.002266263 mg/L	0.11925116 lbs/day	BPJ
Boron, Total	0.036352909 mg/L	2.53686603 lbs/day	0.002938623 mg/L	0.1546309 lbs/day	BPJ
Cobalt, Total	0.391492871 mg/L	27.3200957 lbs/day	0.287080868 mg/L	15.1062491 lbs/day	BPJ
Molybdenum	4.425441153 mg/L	308.826762 lbs/day	2.892023266 mg/L	152.178807 lbs/day	BPJ
Manganese	2.908232757 mg/L	202.949282 lbs/day	0.515389276 mg/L	27.1198804 lbs/day	BPJ
Barium, Total	16.69437457 mg/L	1165.00694 lbs/day	4.860030451 mg/L	255.735714 lbs/day	BPJ
Chloride, Total	15979.74158 mg/L	1115136.7 lbs/day	12024.06851 mg/L	632708.74 lbs/day	BPJ
Sodium, Total	10345.72925 mg/L	721970.524 lbs/day	7781.648979 mg/L	409471.829 lbs/day	BPJ
Calcium, Total	1113.237943 mg/L	77686.6436 lbs/day	266.2844591 mg/L	14011.9382 lbs/day	BPJ
Strontium, Total	5.816465513 mg/L	405.898565 lbs/day	2.983832649 mg/L	157.009834 lbs/day	BPJ
Silica, Total	28.52305204 mg/L	1990.46412 lbs/day	12.25179769 mg/L	644.691893 lbs/day	BPJ
Bromide, Total	32.82805259 mg/L	2290.886 lbs/day	15.21243837 mg/L	800.48136 lbs/day	BPJ
Iodine, Total	0.710279923 mg/L	49.5664594 lbs/day	0.382020998 mg/L	20.1020166 lbs/day	BPJ
NaCl O3 (Sodium Chlorate)	1451.040363 mg/L	101259.983 lbs/day	781.8997827 mg/L	41143.7132 lbs/day	BPJ
Antimony, Total	0.036352909 mg/L	2.53686603 lbs/day	0.002938623 mg/L	0.1546309 lbs/day	BPJ
Cadmium, Total	0.089484085 mg/L	6.24459331 lbs/day	0.036167668 mg/L	1.9031495 lbs/day	BPJ
Potassium, Total	1009.212694 mg/L	70427.3039 lbs/day	253.8518231 mg/L	13357.7305 lbs/day	BPJ
Silver, Total	0.002237102 mg/L	0.15611483 lbs/day	0.00113024 mg/L	0.05947342 lbs/day	BPJ
Tin, Total	0.036352909 mg/L	2.53686603 lbs/day	0.002938623 mg/L	0.1546309 lbs/day	BPJ
Titanium, Total	3.634580432 mg/L	253.63702 lbs/day	0.269557741 mg/L	14.1841789 lbs/day	BPJ
Vanadium, Total	0.229302967 mg/L	16.0017703 lbs/day	0.115284443 mg/L	6.06628903 lbs/day	BPJ
Acetate	4.436902289 mg/L	309.626571 lbs/day	2.329373701 mg/L	122.572081 lbs/day	BPJ
Amine	4.377248347 mg/L	305.463656 lbs/day	2.263342585 mg/L	119.097511 lbs/day	BPJ
Hexaphosphate	15.52915801 mg/L	1083.693 lbs/day	7.764579005 mg/L	408.573604 lbs/day	BPJ
Hydroquinone	4.377248347 mg/L	305.463656 lbs/day	2.263342585 mg/L	119.097511 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	9.594600501 mg/L	669.553454 lbs/day	5.130768372 mg/L	269.981994 lbs/day	BPJ
Acetaldehyde	0.014146829 mg/L	0.98722799 lbs/day	0.002666191 mg/L	0.14029548 lbs/day	BPJ
Outfall 001 - Pollutants from Miss. River Only					
Phosphorus (as P), Total	2.251172191 mg/L	157.096704 lbs/day	0.327204533 mg/L	17.2175639 lbs/day	BPJ
Nitrate-Nitrite (as N)	2.597506374 mg/L	181.265428 lbs/day	1.511373318 mg/L	79.5287475 lbs/day	BPJ
Sodium, Total	77.92519122 mg/L	5437.96283 lbs/day	31.16233645 mg/L	1639.76799 lbs/day	BPJ
Chloride, Total	105.6319259 mg/L	7371.46073 lbs/day	36.35086547 mg/L	1912.78936 lbs/day	BPJ
Silica, Total	20.78005099 mg/L	1450.12342 lbs/day	8.990334065 mg/L	473.073065 lbs/day	BPJ
Nickel, Total	0.069266837 mg/L	4.83374474 lbs/day	0.004284821 mg/L	0.2254681 lbs/day	BPJ
Lead, Total	0.043291773 mg/L	3.02109046 lbs/day	0.003583669 mg/L	0.18857332 lbs/day	BPJ
Cadmium, Total	0.024243393 mg/L	1.69181066 lbs/day	0.00160486 mg/L	0.08444805 lbs/day	BPJ
Chromium, Total	0.017316709 mg/L	1.20843619 lbs/day	0.015581168 mg/L	0.81988399 lbs/day	BPJ
Copper, Total	0.084851875 mg/L	5.92133731 lbs/day	0.009052659 mg/L	0.4763526 lbs/day	BPJ
Magnesium, Total	36.36508924 mg/L	2537.71599 lbs/day	18.52600902 mg/L	974.842069 lbs/day	BPJ
Potassium, Total	11.42902805 mg/L	797.567882 lbs/day	4.596444626 mg/L	241.865778 lbs/day	BPJ
Silver, Total	0.001731671 mg/L	0.12084362 lbs/day	0.001558117 mg/L	0.0819884 lbs/day	BPJ
Vanadium, Total	0.060608482 mg/L	4.22952665 lbs/day	0.003131815 mg/L	0.16479668 lbs/day	BPJ
Zinc, Total	0.159313724 mg/L	11.1176129 lbs/day	0.020909928 mg/L	1.10028432 lbs/day	BPJ
Oil and Grease	13.85336733 mg/L	966.748948 lbs/day	4.715271494 mg/L	248.11847 lbs/day	BPJ
Sulfate (as SO4)	152.3670406 mg/L	10634.2384 lbs/day	74.02613023 mg/L	3895.26886 lbs/day	BPJ
Cobalt, Total	0.010390025 mg/L	0.72506171 lbs/day	0.007790584 mg/L	0.409942 lbs/day	BPJ
Iron, Total	0.692668366 mg/L	48.3374474 lbs/day	0.046213745 mg/L	2.43177593 lbs/day	BPJ
Manganese, Total	0.034633418 mg/L	2.41687237 lbs/day	0.017139285 mg/L	0.90187239 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
arium, Total	0.173167092 mg/L	12.0843619 lbs/day	0.128279758 mg/L	6.75010493 lbs/day	BPJ
Calcium, Total	95.24190038 mg/L	6646.39902 lbs/day	59.76936131 mg/L	3145.075 lbs/day	BPJ
Aluminum, Total	0.017316709 mg/L	1.20843619 lbs/day	0.015581168 mg/L	0.81988399 lbs/day	BPJ
Fluoride	1.03900255 mg/L	72.5061711 lbs/day	0.405110374 mg/L	21.3169839 lbs/day	BPJ
BOD	7.280617729 mg/L	508.073551 lbs/day	2.35262275 mg/L	123.79545 lbs/day	BPJ
COD	165.4685847 mg/L	11547.1262 lbs/day	41.39612938 mg/L	2178.27209 lbs/day	BPJ
TOC	26.47497356 mg/L	1847.54019 lbs/day	9.684612218 mg/L	509.606111 lbs/day	BPJ
Flow	14.1376202 MGD	14.1376202 MGD	6.3053 MGD	6.3053 MGD	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 002					
Group A					
Biochemical Oxygen Demand (BOD)	30 mg/L	25.287 lbs/day	15 mg/L	12.643 lbs/day	BPJ
Chemical Oxygen Demand (COD)	430 mg/L	362.44 lbs/day	45 mg/L	37.93 lbs/day	BPJ
Total Organic Carbon (TOC)	300 mg/L	252.87 lbs/day	150 mg/L	126.43 lbs/day	BPJ
Total Suspended Solids (TSS)	55000 mg/L	46359 lbs/day	13000 mg/L	10957 lbs/day	BPJ
Flow	0.15 MGD	0.15 MGD	0.10 MGD	0.10 MGD	BPJ
Ammonia (as N)	< 1 mg/L	< 0.843 lbs/day	< 1 mg/L	< 0.843 lbs/day	BPJ
Temperature (Winter)	90 °F	90 °F	60 °F	60 °F	BPJ
Temperature (Summer)	90 °F	90 °F	70 °F	70 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Oil and Grease	< 15 mg/L	< 12.64 lbs/day	< 10 mg/L	< 8.43 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 003					
Group A					
Biochemical Oxygen Demand (BOD)	< 60 mg/L	< 1226.87 lbs/day mg/L	< 30 mg/L	< 613.44 lbs/day	BPJ
Chemical Oxygen Demand (COD)	< 200 mg/L	< 4089.57 lbs/day mg/L	< 100 mg/L	< 2044.79 lbs/day	BPJ
Total Organic Carbon (TOC)	< 10 mg/L	< 204.48 lbs/day mg/L	< 10 mg/L	< 204.48 lbs/day	BPJ
Total Suspended Solids (TSS)	< 100 mg/L	< 2044.79 lbs/day mg/L	< 30 mg/L	< 613.44 lbs/day	BPJ
Flow	22.66 MGD	22.66 MGD GPD	2.45 MGD	2.45 MGD	BPJ
Ammonia (as N)	< 1 mg/L	< 20.45 lbs/day mg/L	< 1 mg/L	< 20.45 lbs/day	BPJ
Temperature (Winter)	90 °F	90 °F -F	60 °F	60 °F	BPJ
Temperature (Summer)	90 °F	90 °F -F	70 °F	70 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU STU	6.5-7.5 SU	6.5-7.5 SU	BPJ
Group B					
Oil & Grease	< 15 mg/L	< 306.72 lbs/day	< 10 mg/l	< 204.48 lbs/day	BPJ
Acenaphthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acenaphthylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acrylonitrile	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
3,4-Benzofluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(k)Fluorathene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Bis(2-ethylhexyl)Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Carbon Tetrachloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroform	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Chlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chrysene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Di-n-butyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,4-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloroethane	< 0.002 mg/L	< 0.04 lbs/day	< 0.001 mg/L	< 0.02 lbs/day	BPJ
1,1-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-trans-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dichlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloropropane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichloropropylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Diethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dimethylphenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Dimethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4,6-Dinitro-o-Cresol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,6-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Ethylbenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluorene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobutadiene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methylene Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Naphthalene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenanthrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Tetrachloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Toluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Chromium, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Copper, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Cyanide, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Lead, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nickel, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Zinc, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2,4-Trichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,1-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,2-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Trichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Vinyl Chloride	< 0.002 mg/L	< 0.04 lbs/day	< 0.001 mg/L	< 0.02 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 101					
Group A					
Biochemical Oxygen Demand (BOD)	55.8104718 mg/L	1038.64514 lbs/day	23.1092975 mg/L	430.069104 lbs/day	BPJ
Chemical Oxygen Demand (COD)	209.328904 mg/L	3895.65689 lbs/day	66.8933874 mg/L	1244.90064 lbs/day	BPJ
Total Organic Carbon (TOC)	201.492625 mg/L	3749.82201 lbs/day	64.4388706 mg/L	1199.22154 lbs/day	BPJ
Total Suspended Solids (TSS)	104.3 mg/L	1941.04591 lbs/day	33.6681506 mg/L	626.571679 lbs/day	BPJ
Flow	5.6724702 MGD	5.6724702 MGD	2.23 MGD	2.23 MGD	BPJ
Ammonia (as N)	10 mg/L	186.102197 lbs/day	5.42736587 mg/L	101.004471 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	95 °F	95 °F	BPJ
Temperature (Summer)	110 °F	110 °F	104 °F	104 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Acenaphthene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Acenaphthylene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Acrylonitrile	0.002 mg/L	0.03722044 lbs/day	0.00073065 mg/L	0.01359762 lbs/day	BPJ
Anthracene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Benzene	0.11 mg/L	2.04712417 lbs/day	0.0219196 mg/L	0.40792853 lbs/day	BPJ
Benzo(a)Anthracene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
3,4-Benzofluoranthene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Benzo(k)Fluoranthene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Benzo(a)Pyrene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Bis(2-ethylhexyl)Phthalate	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Carbon Tetrachloride	0.032 mg/L	0.59552703 lbs/day	0.01060608 mg/L	0.19738142 lbs/day	BPJ
Chlorobenzene	0.014 mg/L	0.26054308 lbs/day	0.00584523 mg/L	0.10878094 lbs/day	BPJ
Chloroethane	0.214 mg/L	3.98258702 lbs/day	0.03270018 mg/L	0.60855762 lbs/day	BPJ
Chloroform	0.039 mg/L	0.72579857 lbs/day	0.0138592 mg/L	0.2579228 lbs/day	BPJ
2-Chlorophenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Chrysene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Di-n-butyl Phthalate	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
1,2-Dichlorobenzene	0.082 mg/L	1.52603802 lbs/day	0.0288492 mg/L	0.53688993 lbs/day	BPJ
1,3-Dichlorobenzene	0.022 mg/L	0.40942483 lbs/day	0.01169045 mg/L	0.21756188 lbs/day	BPJ
1,4-Dichlorobenzene	0.014 mg/L	0.26054308 lbs/day	0.00584523 mg/L	0.10878094 lbs/day	BPJ
1,1-Dichloroethane	0.047 mg/L	0.87468033 lbs/day	0.00819965 mg/L	0.15259731 lbs/day	BPJ
1,2-Dichloroethane	0.2 mg/L	3.72204394 lbs/day	0.02403076 mg/L	0.44721781 lbs/day	BPJ
1,1-Dichloroethylene	0.02 mg/L	0.37220439 lbs/day	0.00631499 mg/L	0.11752344 lbs/day	BPJ
1,2-trans-Dichloroethylene	0.043 mg/L	0.80023945 lbs/day	0.00782272 mg/L	0.14558253 lbs/day	BPJ
2,4-Dichlorophenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
1,2-Dichloropropane	0.115 mg/L	2.14017527 lbs/day	0.05732147 mg/L	1.06676509 lbs/day	BPJ
1,3-Dichloropropylene	0.022 mg/L	0.40942483 lbs/day	0.00706886 mg/L	0.13155298 lbs/day	BPJ
Diethyl Phthalate	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
2,4-Dimethylphenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Dimethyl Phthalate	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
4,6-Dinitro-o-Cresol	0.025 mg/L	0.46525549 lbs/day	0.0089563 mg/L	0.1666788 lbs/day	BPJ
2,4-Dinitrophenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
2,4-Dinitrotoluene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
2,6-Dinitrotoluene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Ethylbenzene	0.054 mg/L	1.00495186 lbs/day	0.01169045 mg/L	0.21756188 lbs/day	BPJ
Fluoranthene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Fluorene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Hexachlorobenzene	0.003 mg/L	0.05583066 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Hexachlorobutadiene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.000E-09 mg/L	3.722E-08 lbs/day	5.000E-10 mg/L	9.305E-09 lbs/day	BPJ
Hexachloroethane	0.043 mg/L	0.80023945 lbs/day	0.01277483 mg/L	0.23774234 lbs/day	BPJ
Methyl Chloride	0.095 mg/L	1.76797087 lbs/day	0.01762293 mg/L	0.32796666 lbs/day	BPJ
Methylene Chloride	0.045 mg/L	0.83745989 lbs/day	0.00895351 mg/L	0.16662685 lbs/day	BPJ
Naphthalene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Nitrobenzene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
2-Nitrophenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
4-Nitrophenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Phenanthrene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Phenol	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Pyrene	0.005 mg/L	0.0930511 lbs/day	0.00164977 mg/L	0.03070262 lbs/day	BPJ
Tetrachloroethylene	0.045 mg/L	0.83745989 lbs/day	0.00819965 mg/L	0.15259731 lbs/day	BPJ
Toluene	0.04 mg/L	0.74440879 lbs/day	0.00914477 mg/L	0.17018619 lbs/day	BPJ
Chromium, Total	0.02310963 mg/L	0.43007538 lbs/day	0.00586797 mg/L	0.10920417 lbs/day	BPJ
Copper, Total	0.63523721 mg/L	11.821904 lbs/day	0.11806802 mg/L	2.19727172 lbs/day	BPJ
Cyanide, Total	0.008 mg/L	0.14888176 lbs/day	0.00150773 mg/L	0.0280591 lbs/day	BPJ
Lead, Total	0.01777409 mg/L	0.33077965 lbs/day	0.00236735 mg/L	0.04405685 lbs/day	BPJ
Nickel, Total	0.05243854 mg/L	0.97589272 lbs/day	0.00811576 mg/L	0.151036 lbs/day	BPJ
Zinc, Total	0.14860864 mg/L	2.7656394 lbs/day	0.02214389 mg/L	0.41210269 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 101					
1,2,4-Trichlorobenzene	0.07 mg/L	1.30271536 lbs/day	0.01352311 mg/L	0.251668 lbs/day	BPJ
1,1,1-Trichloroethane	0.046 mg/L	0.85607011 lbs/day	0.01315176 mg/L	0.24475712 lbs/day	BPJ
1,1,2-Trichloroethane	0.043 mg/L	0.80023945 lbs/day	0.00782272 mg/L	0.14558253 lbs/day	BPJ
Trichloroethylene	0.043 mg/L	0.80023945 lbs/day	0.01277483 mg/L	0.23774234 lbs/day	BPJ
Vinyl Chloride	0.1 mg/L	1.86102197 lbs/day	0.06665749 mg/L	1.24051061 lbs/day	BPJ
2,2-Bis(4-hydroxyphenyl) Propane	10 mg/L	186.102197 lbs/day	3.53721973 mg/L	65.8284363 lbs/day	BPJ
Total Residual Chlorine	10 mg/L	186.102197 lbs/day	3.65029912 mg/L	67.9328685 lbs/day	BPJ
Oil and Grease	< 17.4877076 mg/L	< 325.450081 lbs/day	< 11.390277 mg/L	< 211.975556 lbs/day	BPJ
Sulfide (as S)	10 mg/L	186.102197 lbs/day	3.53721973 mg/L	65.8284363 lbs/day	BPJ
Surfactants	5 mg/L	93.0510985 lbs/day	1.5053514 mg/L	28.0149203 lbs/day	BPJ
Aluminum, Total	160.00311 mg/L	2977.69302 lbs/day	30.1622609 mg/L	561.326302 lbs/day	BPJ
Iron, Total	3.82438538 mg/L	71.1726522 lbs/day	0.70354748 mg/L	13.0931733 lbs/day	BPJ
Phenols, Total	10 mg/L	186.102197 lbs/day	3.54475836 mg/L	65.9687318 lbs/day	BPJ
Diethylamine	3 mg/L	55.8306591 lbs/day	0.70744395 mg/L	13.1656873 lbs/day	BPJ
o-Naphthoquinon	3 mg/L	55.8306591 lbs/day	0.70744395 mg/L	13.1656873 lbs/day	BPJ
Naphthoquinone	3 mg/L	55.8306591 lbs/day	0.70744395 mg/L	13.1656873 lbs/day	BPJ
Buthyl Hydroxy Toluene	10 mg/L	186.102197 lbs/day	3.53721973 mg/L	65.8284363 lbs/day	BPJ
Fluoride	0.50657807 mg/L	9.42752924 lbs/day	0.11487403 mg/L	2.1378309 lbs/day	BPJ
Nitrate-Nitrite (as N)	1.70644518 mg/L	31.7573198 lbs/day	0.59290457 mg/L	11.0340843 lbs/day	BPJ
Phosphorus (as P), Total	25.4042525 mg/L	472.77872 lbs/day	7.29566891 mg/L	135.774001 lbs/day	BPJ
Sulfite (as SO3)	5900 mg/L	109800.296 lbs/day	361.621939 mg/L	6729.86374 lbs/day	BPJ
Sulfate (as SO4)	6427.36478 mg/L	119614.671 lbs/day	550.408497 mg/L	10243.223 lbs/day	BPJ
Magnesium, Total	17.5302326 mg/L	326.241479 lbs/day	6.75685688 mg/L	125.746591 lbs/day	BPJ
Bromoform	0.04 mg/L	0.74440879 lbs/day	0.00188466 mg/L	0.03507387 lbs/day	BPJ
Chlorodibromomethane	0.01 mg/L	0.1861022 lbs/day	0.00188466 mg/L	0.03507387 lbs/day	BPJ
Dichlorobromomethane	0.06 mg/L	1.11661318 lbs/day	0.00075386 mg/L	0.01402955 lbs/day	BPJ
Methylbromide	0.01 mg/L	0.1861022 lbs/day	0.00188466 mg/L	0.03507387 lbs/day	BPJ
1,1,2,2-Tetrachloroethane	0.043 mg/L	0.80023945 lbs/day	0.00640783 mg/L	0.11925116 lbs/day	BPJ
Molybdenum	5 mg/L	93.0510985 lbs/day	2.12233184 mg/L	39.4970616 lbs/day	BPJ
Bromide	20 mg/L	372.204394 lbs/day	3.76931284 mg/L	70.14774 lbs/day	BPJ
Titanium	10 mg/L	186.102197 lbs/day	0.75386257 mg/L	14.029548 lbs/day	BPJ
Acetaldehyde	0.04 mg/L	0.74440879 lbs/day	0.00753863 mg/L	0.14029548 lbs/day	BPJ
Chloride, Total	18.9687708 mg/L	353.012991 lbs/day	4.89616143 mg/L	91.11864 lbs/day	BPJ
Silica, Total	3.73156146 mg/L	69.4451786 lbs/day	1.21092377 mg/L	22.5355573 lbs/day	BPJ
Cadmium, Total	0.00435349 mg/L	0.08101938 lbs/day	0.00021616 mg/L	0.00402281 lbs/day	BPJ
Potassium, Total	2.0523588 mg/L	38.1948482 lbs/day	0.61910314 mg/L	11.5216454 lbs/day	BPJ
Silver, Total	0.00031096 mg/L	0.0057871 lbs/day	0.00020987 mg/L	0.00390564 lbs/day	BPJ
Vanadium, Total	0.01088372 mg/L	0.20254844 lbs/day	0.00042183 mg/L	0.00785034 lbs/day	BPJ
Cobalt, Total	0.00186578 mg/L	0.03472259 lbs/day	0.00104933 mg/L	0.01952821 lbs/day	BPJ
Manganese, Total	0.00621927 mg/L	0.11574196 lbs/day	0.00230852 mg/L	0.04296207 lbs/day	BPJ
Barium, Total	0.03109635 mg/L	0.57870982 lbs/day	0.01727822 mg/L	0.32155155 lbs/day	BPJ
Calcium, Total	17.10299 mg/L	318.290402 lbs/day	8.05043946 mg/L	149.820447 lbs/day	BPJ

Pollutant	Maximum		Average		
	Concentration	Mass	Concentration	Mass	Source
Outfall 101 - Only Pollutants from Process					
Group A					
Biochemical Oxygen Demand (BOD)	55 mg/L	1031.006171 lbs/day	23 mg/L	426.2389 lbs/day	BPJ
Chemical Oxygen Demand (COD)	200 mg/L	3722.04394 lbs/day	65 mg/L	1212.697 lbs/day	BPJ
Total Organic Carbon (TOC)	200 mg/L	3722.04394 lbs/day	64 mg/L	1191.688 lbs/day	BPJ
Total Suspended Solids (TSS)	104 mg/L	1941.045915 lbs/day	34 mg/L	626.5717 lbs/day	BPJ
Flow	5.6725 MGD	5.6725 MGD	2.2300 MGD	2.2300 MGD	BPJ
Ammonia (as N)	10 mg/L	186.102197 lbs/day	5 mg/L	101.0045 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	95 °F	95 °F	BPJ
Temperature (Summer)	110 °F	110 °F	104 °F	104 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Acenaphthene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Acenaphthylene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Acrylonitrile	0.0020 mg/L	0.037220439 lbs/day	0.0007 mg/L	0.013598 lbs/day	BPJ
Anthracene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Benzene	0.1100 mg/L	2.047124167 lbs/day	0.0219 mg/L	0.407929 lbs/day	BPJ
Benzo(a)Anthracene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
3,4-Benzofluoranthene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Benzo(k)Fluoranthene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Benzo(a)Pyrene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Bis(2-ethylhexyl)Phthalate	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Carbon Tetrachloride	0.0320 mg/L	0.59552703 lbs/day	0.0106 mg/L	0.197381 lbs/day	BPJ
Chlorobenzene	0.0140 mg/L	0.260543076 lbs/day	0.0058 mg/L	0.108781 lbs/day	BPJ
Chloroethane	0.2140 mg/L	3.982587016 lbs/day	0.0327 mg/L	0.608558 lbs/day	BPJ
Chloroform	0.0390 mg/L	0.725798568 lbs/day	0.0139 mg/L	0.257923 lbs/day	BPJ
2-Chlorophenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Chrysene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Di-n-butyl Phthalate	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
1,2-Dichlorobenzene	0.0820 mg/L	1.526038015 lbs/day	0.0288 mg/L	0.53689 lbs/day	BPJ
1,3-Dichlorobenzene	0.0220 mg/L	0.409424833 lbs/day	0.0117 mg/L	0.217562 lbs/day	BPJ
1,4-Dichlorobenzene	0.0140 mg/L	0.260543076 lbs/day	0.0058 mg/L	0.108781 lbs/day	BPJ
1,1-Dichloroethane	0.0470 mg/L	0.874680326 lbs/day	0.0082 mg/L	0.152597 lbs/day	BPJ
1,2-Dichloroethane	0.2000 mg/L	3.72204394 lbs/day	0.0240 mg/L	0.447218 lbs/day	BPJ
1,1-Dichloroethylene	0.0200 mg/L	0.372204394 lbs/day	0.0063 mg/L	0.117523 lbs/day	BPJ
1,2-trans-Dichloroethylene	0.0430 mg/L	0.800239447 lbs/day	0.0078 mg/L	0.145583 lbs/day	BPJ
2,4-Dichlorophenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
1,2-Dichloropropane	0.1150 mg/L	2.140175266 lbs/day	0.0573 mg/L	1.066765 lbs/day	BPJ
1,3-Dichloropropylene	0.0220 mg/L	0.409424833 lbs/day	0.0071 mg/L	0.131553 lbs/day	BPJ
Diethyl Phthalate	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
2,4-Dimethylphenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Dimethyl Phthalate	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
4,6-Dinitro-o-Cresol	0.0250 mg/L	0.465255493 lbs/day	0.0090 mg/L	0.166679 lbs/day	BPJ
2,4-Dinitrophenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
2,4-Dinitrotoluene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
2,6-Dinitrotoluene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Ethylbenzene	0.0540 mg/L	1.004951864 lbs/day	0.0117 mg/L	0.217562 lbs/day	BPJ
Fluoranthene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Fluorene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Hexachlorobenzene	0.0030 mg/L	0.055830659 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Hexachlorobutadiene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.000E-09 mg/L	3.722E-08 lbs/day	< 5.000E-10 mg/L	< 9.305E-09 lbs/day	BPJ
Hexachloroethane	0.0430 mg/L	0.800239447 lbs/day	0.0128 mg/L	0.237742 lbs/day	BPJ
Methyl Chloride	0.0950 mg/L	1.767970872 lbs/day	0.0176 mg/L	0.327967 lbs/day	BPJ
Methylene Chloride	0.0450 mg/L	0.837459887 lbs/day	0.0090 mg/L	0.166627 lbs/day	BPJ
Naphthalene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Nitrobenzene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
2-Nitrophenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
4-Nitrophenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Phenanthrene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Phenol	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Pyrene	0.0050 mg/L	0.093051099 lbs/day	0.0016 mg/L	0.030703 lbs/day	BPJ
Tetrachloroethylene	0.0450 mg/L	0.837459887 lbs/day	0.0082 mg/L	0.152597 lbs/day	BPJ
Toluene	0.0400 mg/L	0.744408788 lbs/day	0.0091 mg/L	0.170186 lbs/day	BPJ
Chromium, Total	0.0200 mg/L	0.372204394 lbs/day	0.0038 mg/L	0.070148 lbs/day	BPJ
Copper, Total	0.6200 mg/L	11.53833621 lbs/day	0.1168 mg/L	2.17458 lbs/day	BPJ
Cyanide, Total	0.0080 mg/L	0.148881758 lbs/day	0.0015 mg/L	0.028059 lbs/day	BPJ
Lead, Total	0.0100 mg/L	0.186102197 lbs/day	0.0019 mg/L	0.035074 lbs/day	BPJ
Nickel, Total	0.0400 mg/L	0.744408788 lbs/day	0.0075 mg/L	0.140295 lbs/day	BPJ
Zinc, Total	0.1200 mg/L	2.233226364 lbs/day	0.0193 mg/L	0.359689 lbs/day	BPJ

101 process only river only

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 101 - Only Pollutants from Process					
1,2,4-Trichlorobenzene	0.0700 mg/L	1.302715379 lbs/day	0.0135 mg/L	0.251668 lbs/day	BPJ
1,1,1-Trichloroethane	0.0460 mg/L	0.856070106 lbs/day	0.0132 mg/L	0.244757 lbs/day	BPJ
1,1,2-Trichloroethane	0.0430 mg/L	0.800239447 lbs/day	0.0078 mg/L	0.145583 lbs/day	BPJ
Trichloroethylene	0.0430 mg/L	0.800239447 lbs/day	0.0128 mg/L	0.237742 lbs/day	BPJ
Vinyl Chloride	0.1000 mg/L	1.86102197 lbs/day	0.0667 mg/L	1.240511 lbs/day	BPJ
2,2-Bis(4-hydroxyphenyl) Propane	10 mg/L	186.102197 lbs/day	3.54 mg/L	65.82844 lbs/day	BPJ
Total Residual Chlorine	10 mg/L	186.102197 lbs/day	3.65 mg/L	67.93267 lbs/day	BPJ
Oil and Grease	< 15 mg/L	< 279.1532955 lbs/day	< 10.84 mg/L	< 201.8046 lbs/day	BPJ
Sulfide (as S)	10 mg/L	186.102197 lbs/day	3.54 mg/L	65.82844 lbs/day	BPJ
Surfactants	5.00 mg/L	93.0510985 lbs/day	1.51 mg/L	28.01492 lbs/day	BPJ
Aluminum, Total	160 mg/L	2977.635152 lbs/day	30 mg/L	561.2872 lbs/day	BPJ
Iron, Total	3.70 mg/L	68.85781289 lbs/day	0.6973 mg/L	12.97733 lbs/day	BPJ
Phenols, Total	10 mg/L	186.102197 lbs/day	3.54 mg/L	65.96873 lbs/day	BPJ
Diethylamine	3.00 mg/L	55.8306591 lbs/day	0.7074 mg/L	13.16569 lbs/day	BPJ
o-Naphthoquinon	3.00 mg/L	55.8306591 lbs/day	0.7074 mg/L	13.16569 lbs/day	BPJ
Naphthoquinone	3.00 mg/L	55.8306591 lbs/day	0.7074 mg/L	13.16569 lbs/day	BPJ
Buthyl Hydroxy Toluene	10 mg/L	186.102197 lbs/day	3.54 mg/L	65.82844 lbs/day	BPJ
Fluoride	0.3200 mg/L	5.955270304 lbs/day	0.0603 mg/L	1.122364 lbs/day	BPJ
Nitrate-Nitrite (as N)	1.2400 mg/L	23.07667243 lbs/day	0.3893 mg/L	7.245611 lbs/day	BPJ
Phosphorus (as P), Total	25 mg/L	465.2554925 lbs/day	7.25 mg/L	134.9538 lbs/day	BPJ
Sulfite (as SO3)	5900 mg/L	109800.2962 lbs/day	362 mg/L	6729.864 lbs/day	BPJ
Sulfate (as SO4)	6400 mg/L	119105.4061 lbs/day	540 mg/L	10057.67 lbs/day	BPJ
Magnesium, Total	11 mg/L	204.7124167 lbs/day	4.26 mg/L	79.3085 lbs/day	BPJ
Bromoform	0.0400 mg/L	0.744408788 lbs/day	0.0019 mg/L	0.035074 lbs/day	BPJ
Chlorodibromomethane	0.0100 mg/L	0.186102197 lbs/day	0.0019 mg/L	0.035074 lbs/day	BPJ
Dichlorobromomethane	0.0600 mg/L	1.116613182 lbs/day	0.0008 mg/L	0.01403 lbs/day	BPJ
Methylbromide	0.0100 mg/L	0.186102197 lbs/day	0.0019 mg/L	0.035074 lbs/day	BPJ
1,1,2,2-Tetrachloroethane	0.0430 mg/L	0.800239447 lbs/day	0.0064 mg/L	0.119251 lbs/day	BPJ
Molybdenum	5.0000 mg/L	93.0510985 lbs/day	2.1223 mg/L	39.49706 lbs/day	BPJ
Bromide	20.0000 mg/L	372.204394 lbs/day	3.7693 mg/L	70.14774 lbs/day	BPJ
Titanium	10.0000 mg/L	186.102197 lbs/day	0.7539 mg/L	14.02955 lbs/day	BPJ
Acetaldehyde	0.0400 mg/L	0.744408788 lbs/day	0.0075 mg/L	0.140295 lbs/day	BPJ

Pollutant	Maximum		Average		
	Concentration	Mass	Concentration	Mass	Source
Outfall 101 - Only Pollutants from Process					
Outfall 101 - Pollutants from Miss. River Only					
Phosphorus (as P), Total	0.4043 mg/L	7.523227685 lbs/day	0.0441 mg/L	0.820185 lbs/day	BPJ
Nitrate-Nitrite (as N)	0.4664 mg/L	8.680647329 lbs/day	0.2036 mg/L	3.788473 lbs/day	BPJ
Sodium, Total	14 mg/L	260.4194199 lbs/day	4.20 mg/L	78.11285 lbs/day	BPJ
Chloride, Total	19 mg/L	353.0129914 lbs/day	4.90 mg/L	91.11864 lbs/day	BPJ
Silica, Total	3.7316 mg/L	69.44517863 lbs/day	1.21 mg/L	22.53556 lbs/day	BPJ
Nickel, Total	0.0124 mg/L	0.231483929 lbs/day	0.0006 mg/L	0.010741 lbs/day	BPJ
Lead, Total	0.0078 mg/L	0.144677455 lbs/day	0.0005 mg/L	0.008983 lbs/day	BPJ
Cadmium, Total	0.0044 mg/L	0.081019375 lbs/day	0.0002 mg/L	0.004023 lbs/day	BPJ
Chromium, Total	0.0031 mg/L	0.057870982 lbs/day	0.0021 mg/L	0.039056 lbs/day	BPJ
Copper, Total	0.0152 mg/L	0.283567813 lbs/day	0.0012 mg/L	0.022692 lbs/day	BPJ
Magnesium, Total	6.53 mg/L	121.5290626 lbs/day	2.50 mg/L	46.43809 lbs/day	BPJ
Potassium, Total	2.05 mg/L	38.19484825 lbs/day	0.62 mg/L	11.52165 lbs/day	BPJ
Silver, Total	0.0003 mg/L	0.005787098 lbs/day	0.0002 mg/L	0.003906 lbs/day	BPJ
Vanadium, Total	0.0109 mg/L	0.202548438 lbs/day	0.0004 mg/L	0.00785 lbs/day	BPJ
Zinc, Total	0.0286 mg/L	0.532413036 lbs/day	0.0028 mg/L	0.052414 lbs/day	BPJ
Oil and Grease	2 mg/L	46.29678575 lbs/day	0.55 mg/L	10.17095 lbs/day	BPJ
Sulfate (as SO4)	27 mg/L	509.2646433 lbs/day	10 mg/L	185.5571 lbs/day	BPJ
Cobalt, Total	0.0019 mg/L	0.034722589 lbs/day	0.0010 mg/L	0.019528 lbs/day	BPJ
Iron, Total	0.1244 mg/L	2.314839288 lbs/day	0.0062 mg/L	0.115841 lbs/day	BPJ
Manganese, Total	0.0062 mg/L	0.115741964 lbs/day	0.0023 mg/L	0.042962 lbs/day	BPJ
Barium, Total	0.0311 mg/L	0.578709827 lbs/day	0.0173 mg/L	0.321552 lbs/day	BPJ
Calcium, Total	17 mg/L	318.290402 lbs/day	8.05 mg/L	149.8204 lbs/day	BPJ
Aluminum, Total	0.0031 mg/L	0.057870982 lbs/day	0.0021 mg/L	0.039056 lbs/day	BPJ
Fluoride	0.1866 mg/L	3.472258931 lbs/day	0.0546 mg/L	1.015467 lbs/day	BPJ
BOD	0.41 mg/L	7.638969649 lbs/day	0.10 mg/L	1.830184 lbs/day	BPJ
COD	9.3 mg/L	173.6129466 lbs/day	2 mg/L	32.20344 lbs/day	BPJ
TOC	1.49 mg/L	27.77807145 lbs/day	0.4048 mg/L	7.533984 lbs/day	BPJ
Flow	5.67 MGD	5.672470203 MGD	2.23 MGD	2.23 MGD	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 201					
Group A					
Biochemical Oxygen Demand (BOD)	55.68582 mg/L	749.4538 lbs/day	27.49932 mg/L	370.1026 lbs/day	BPJ
Chemical Oxygen Demand (COD)	351.8048 mg/L	4734.804 lbs/day	106.3715 mg/L	1431.612 lbs/day	BPJ
Total Organic Carbon (TOC)	101.1847 mg/L	1361.805 lbs/day	41.55998 mg/L	559.3396 lbs/day	BPJ
Total Suspended Solids (TSS)	59.9678 mg/L	807.0833 lbs/day	19.98927 mg/L	269.0278 lbs/day	BPJ
Flow	2.41755 MGD	2.41755 MGD	1.6127 MGD	1.6127 MGD	BPJ
Ammonia (as N)	4.997317 mg/L	67.25694 lbs/day	2.498658 mg/L	33.62847 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	90 °F	90 °F	BPJ
Temperature (Summer)	110 °F	110 °F	100 °F	100 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Phosphorus (as P), Total	45.74457 mg/L	615.6583 lbs/day	14.18241 mg/L	190.8756 lbs/day	BPJ
Sulfate (as SO4)	565.3103 mg/L	7608.292 lbs/day	372.3277 mg/L	5011.014 lbs/day	BPJ
Total Residual Chlorine	1.998927 mg/L	26.90278 lbs/day	0.999463 mg/L	13.45139 lbs/day	BPJ
Zinc, Total	25.25232 mg/L	339.8611 lbs/day	2.868057 mg/L	38.60006 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	0.999463 mg/L	13.45139 lbs/day	0.399785 mg/L	5.380555 lbs/day	BPJ
Molybdenum	14.99195 mg/L	201.7708 lbs/day	9.994633 mg/L	134.5139 lbs/day	BPJ
Sulfide (as S)	119.9356 mg/L	1614.167 lbs/day	89.9517 mg/L	1210.625 lbs/day	BPJ
Magnesium, Total	64.65396 mg/L	870.1524 lbs/day	37.3413 mg/L	502.562 lbs/day	BPJ
Acenaphthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acenaphthylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acrylonitrile	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
3,4-Benzofluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(k)Fluorathene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Bis(2-ethylhexyl)Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Carbon Tetrachloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroform	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Chlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chrysene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Di-n-butyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,4-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-trans-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dichlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloropropane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichloropropylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Diethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dimethylphenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Dimethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4,6-Dinitro-o-Cresol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,6-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Ethylbenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluorene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobutadiene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 201					
Hexachloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methylene Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Naphthalene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenanthrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Tetrachloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Toluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chromium, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Copper, Total	0.141531 mg/L	1.904809 lbs/day	0.016782 mg/L	0.225856 lbs/day	BPJ
Cyanide, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Lead, Total	0.07221 mg/L	0.971842 lbs/day	0.006643 mg/L	0.089409 lbs/day	BPJ
Nickel, Total	0.115535 mg/L	1.554946 lbs/day	0.007943 mg/L	0.106903 lbs/day	BPJ
1,2,4-Trichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,1-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,2-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Trichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Vinyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrate-Nitrite (as N)	4.332579 mg/L	58.31049 lbs/day	2.801734 mg/L	37.70745 lbs/day	BPJ
Sodium, Total	129.9774 mg/L	1749.315 lbs/day	57.76772 mg/L	777.4732 lbs/day	BPJ
Chloride, Total	176.1915 mg/L	2371.293 lbs/day	67.38604 mg/L	906.9225 lbs/day	BPJ
Sillica, Total	34.66063 mg/L	466.4839 lbs/day	16.66599 mg/L	224.301 lbs/day	BPJ
Cadmium, Total	0.040437 mg/L	0.544231 lbs/day	0.002975 mg/L	0.04004 lbs/day	BPJ
Chromium, Total	0.028884 mg/L	0.388737 lbs/day	0.028884 mg/L	0.388737 lbs/day	BPJ
Potassium, Total	19.06335 mg/L	256.5662 lbs/day	8.520739 mg/L	114.6773 lbs/day	BPJ
Silver, Total	0.002888 mg/L	0.038874 lbs/day	0.002888 mg/L	0.038874 lbs/day	BPJ
Vanadium, Total	0.101094 mg/L	1.360578 lbs/day	0.005806 mg/L	0.078136 lbs/day	BPJ
Oil and Grease	23.10709 mg/L	310.9893 lbs/day	7.521839 mg/L	101.2335 lbs/day	BPJ
Cobalt, Total	0.01733 mg/L	0.233242 lbs/day	0.014442 mg/L	0.194368 lbs/day	BPJ
Iron, Total	1.155354 mg/L	15.54946 lbs/day	0.08567 mg/L	1.152993 lbs/day	BPJ
Manganese, Total	0.057768 mg/L	0.777473 lbs/day	0.031772 mg/L	0.42761 lbs/day	BPJ
Barium, Total	0.288839 mg/L	3.887366 lbs/day	0.237801 mg/L	3.200469 lbs/day	BPJ
Calcium, Total	158.8612 mg/L	2138.051 lbs/day	110.7985 mg/L	1491.194 lbs/day	BPJ
Aluminum, Total	0.028884 mg/L	0.388737 lbs/day	0.028884 mg/L	0.388737 lbs/day	BPJ
Fluoride	1.733032 mg/L	23.3242 lbs/day	0.75098 mg/L	10.10715 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 201 - Only Pollutants from Process					
Group A					
Biochemical Oxygen Demand (BOD)	43 mg/L	578.41 lbs/day	23 mg/L	309.382 lbs/day	BPJ
Chemical Oxygen Demand (COD)	63 mg/L	847.437 lbs/day	27 mg/L	363.187 lbs/day	BPJ
Total Organic Carbon (TOC)	55 mg/L	739.826 lbs/day	23 mg/L	309.382 lbs/day	BPJ
Total Suspended Solids (TSS)	60 mg/L	807.083 lbs/day	20 mg/L	269.028 lbs/day	BPJ
Flow	2.4176 MGD	2.41755 MGD	1.6127 MGD	1.6127 MGD	BPJ
Ammonia (as N)	5.0 mg/L	67.2569 lbs/day	2.5 mg/L	33.6285 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	90 °F	90 °F	BPJ
Temperature (Summer)	110 °F	110 °F	100 °F	100 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					
Phosphorus (as P), Total	42 mg/L	565.123 lbs/day	14 mg/L	182.712 lbs/day	BPJ
Sulfate (as SO4)	311 mg/L	4187.41 lbs/day	235 mg/L	3164.13 lbs/day	BPJ
Total Residual Chlorine	2 mg/L	26.9028 lbs/day	1 mg/L	13.4514 lbs/day	BPJ
Zinc, Total	25 mg/L	336.285 lbs/day	3 mg/L	38.0784 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	1 mg/L	13.4514 lbs/day	0.4 mg/L	5.38056 lbs/day	BPJ
Molybdenum	15 mg/L	201.771 lbs/day	10 mg/L	134.514 lbs/day	BPJ
Sulfide (as S)	120 mg/L	1614.17 lbs/day	90 mg/L	1210.62 lbs/day	BPJ
Magnesium, Total	4 mg/L	53.8056 lbs/day	3 mg/L	40.3542 lbs/day	BPJ
Acenaphthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acenaphthylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acrylonitrile	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
3,4-Benzofluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(k)Fluorathene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Bis(2-ethylhexyl)Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Carbon Tetrachloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroform	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Chlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chrysene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Di-n-butyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,4-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-trans-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dichlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloropropane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichloropropylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Diethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dimethylphenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Dimethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4,6-Dinitro-o-Cresol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,6-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Ethylbenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluorene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobutadiene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methylene Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Naphthalene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 201 - Only Pollutants from Process					
Phenanthrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Tetrachloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Toluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chromium, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Copper, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Cyanide, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Lead, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nickel, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2,4-Trichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,1-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,2-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Trichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Vinyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Outfall 201 - Pollutants from Miss. River Only					
Phosphorus (as P), Total	4 mg/L	50.5358 lbs/day	1 mg/L	8.16347 lbs/day	BPJ
Nitrate-Nitrite (as N)	4 mg/L	58.3105 lbs/day	3 mg/L	37.7075 lbs/day	BPJ
Sodium, Total	130 mg/L	1749.31 lbs/day	58 mg/L	777.473 lbs/day	BPJ
Chloride, Total	176 mg/L	2371.29 lbs/day	67 mg/L	906.923 lbs/day	BPJ
Sillica, Total	35 mg/L	466.484 lbs/day	17 mg/L	224.301 lbs/day	BPJ
Nickel, Total	0.12 mg/L	1.55495 lbs/day	0.01 mg/L	0.1069 lbs/day	BPJ
Lead, Total	0.07 mg/L	0.97184 lbs/day	0.01 mg/L	0.08941 lbs/day	BPJ
Cadmium, Total	0.04 mg/L	0.54423 lbs/day	0.00 mg/L	0.04004 lbs/day	BPJ
Chromium, Total	0.03 mg/L	0.38874 lbs/day	0.03 mg/L	0.38874 lbs/day	BPJ
Copper, Total	0.14 mg/L	1.90481 lbs/day	0.02 mg/L	0.22586 lbs/day	BPJ
Magnesium, Total	61 mg/L	816.347 lbs/day	34 mg/L	462.208 lbs/day	BPJ
Potassium, Total	19 mg/L	256.566 lbs/day	9 mg/L	114.677 lbs/day	BPJ
Silver, Total	0.003 mg/L	0.03887 lbs/day	0.003 mg/L	0.03887 lbs/day	BPJ
Vanadium, Total	0.10 mg/L	1.36058 lbs/day	0.01 mg/L	0.07814 lbs/day	BPJ
Zinc, Total	0.27 mg/L	3.57638 lbs/day	0.04 mg/L	0.52168 lbs/day	BPJ
Oil and Grease	23 mg/L	310.989 lbs/day	8 mg/L	101.234 lbs/day	BPJ
Sulfate (as SO4)	254 mg/L	3420.88 lbs/day	137 mg/L	1846.89 lbs/day	BPJ
Cobalt, Total	0.02 mg/L	0.23324 lbs/day	0.01 mg/L	0.10437 lbs/day	BPJ
Iron, Total	1 mg/L	15.5495 lbs/day	0.09 mg/L	1.15299 lbs/day	BPJ
Manganese, Total	0.06 mg/L	0.77747 lbs/day	0.03 mg/L	0.42761 lbs/day	BPJ
Barium, Total	0.29 mg/L	3.88737 lbs/day	0.24 mg/L	3.20047 lbs/day	BPJ
Calcium, Total	159 mg/L	2138.05 lbs/day	111 mg/L	1491.19 lbs/day	BPJ
Aluminum, Total	0.03 mg/L	0.38874 lbs/day	0.03 mg/L	0.38874 lbs/day	BPJ
Fluoride	2 mg/L	23.3242 lbs/day	1 mg/L	10.1072 lbs/day	BPJ
BOD	13 mg/L	171.044 lbs/day	5 mg/L	60.7207 lbs/day	BPJ
COD	289 mg/L	3887.37 lbs/day	79 mg/L	1068.42 lbs/day	BPJ
TOC	46 mg/L	621.979 lbs/day	19 mg/L	249.958 lbs/day	BPJ
Flow	2.4176 GPD	2.41755 GPD	1.6127 GPD	1.6127 GPD	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 301					
Group A					
Biochemical Oxygen Demand (BOD)	71.23555 mg/L	1048.202 lbs/day	36.7894 mg/L	541.341 lbs/day	BPJ
Chemical Oxygen Demand (COD)	271.7171 mg/L	3998.206 lbs/day	117.4859 mg/L	1728.756 lbs/day	BPJ
Total Organic Carbon (TOC)	107.6747 mg/L	1584.39 lbs/day	49.36611 mg/L	726.4021 lbs/day	BPJ
Total Suspended Solids (TSS)	103 mg/L	1515.603 lbs/day	78 mg/L	1147.738 lbs/day	BPJ
Flow	4.937 MGD	4.937 MGD	1.7632 MGD	1.7632 MGD	BPJ
Ammonia (as N)	1.4 mg/L	20.60043 lbs/day	0.14 mg/L	2.060043 lbs/day	BPJ
Temperature (Winter)	130 °F	130 °F	75 °F	75 °F	BPJ
Temperature (Summer)	190 °F	190 °F	115 °F	115 °F	BPJ
pH	6-9 SU	6-9 SU	6-9 SU	6-9 SU	BPJ
Group B					
Total Residual Chlorine	3.41 mg/L	50.17676 lbs/day	1.72989 mg/L	25.45462 lbs/day	BPJ
Oil and Grease	21.33737 mg/L	313.9707 lbs/day	11.93517 mg/L	175.6212 lbs/day	BPJ
Sulfide (as SO4)	17458.71 mg/L	256897.8 lbs/day	8064.464 mg/L	118665.3 lbs/day	BPJ
Sulfite (as SO3)	73.2 mg/L	1077.108 lbs/day	39.44796 mg/L	580.4606 lbs/day	BPJ
Aluminum, Total	6.234172 mg/L	91.73329 lbs/day	3.358065 mg/L	49.41256 lbs/day	BPJ
Boron, Total	0.13 mg/L	1.912897 lbs/day	0.010509 mg/L	0.154631 lbs/day	BPJ
Cobalt, Total	1.408503 mg/L	20.72555 lbs/day	1.032345 mg/L	15.19053 lbs/day	BPJ
Iron, Total	32.96687 mg/L	485.094 lbs/day	14.42278 mg/L	212.2254 lbs/day	BPJ
Magnesium, Total	698.7606 mg/L	10281.98 lbs/day	248.0453 mg/L	3649.886 lbs/day	BPJ
Molybdenum, Total	0.13 mg/L	1.912897 lbs/day	0.010509 mg/L	0.154631 lbs/day	BPJ
Manganese, Total	10.42834 mg/L	153.4488 lbs/day	1.855662 mg/L	27.30531 lbs/day	BPJ
Barium, Total	59.84172 mg/L	880.5464 lbs/day	17.47405 mg/L	257.1235 lbs/day	BPJ
Phosphorus (as P)	6.692322 mg/L	98.47479 lbs/day	1.453112 mg/L	21.38196 lbs/day	BPJ
Nitrate-Nitrite (as N)	52.12576 mg/L	767.0092 lbs/day	21.40105 mg/L	314.9077 lbs/day	BPJ
Chloride, Total	56516.88 mg/L	831622.9 lbs/day	42549.46 mg/L	626097.9 lbs/day	BPJ
Sodium, Total	36624.34 mg/L	538912.2 lbs/day	27572.85 mg/L	405723.2 lbs/day	BPJ
Calcium, Total	4058.944 mg/L	59725.71 lbs/day	996.1925 mg/L	14658.57 lbs/day	BPJ
Strontium, Total	20.8 mg/L	306.0635 lbs/day	10.67035 mg/L	157.0098 lbs/day	BPJ
Silica, Total	119.0061 mg/L	1751.125 lbs/day	50.42312 mg/L	741.9556 lbs/day	BPJ
Bromide, Total	92.1 mg/L	1355.214 lbs/day	49.63329 mg/L	730.3336 lbs/day	BPJ
Iodine, Total	2.54 mg/L	37.37506 lbs/day	1.366128 mg/L	20.10202 lbs/day	BPJ
Nickel, Total	57.15669 mg/L	841.0373 lbs/day	26.35568 mg/L	387.8131 lbs/day	BPJ
Lead, Total	6.925429 mg/L	101.9049 lbs/day	0.390648 mg/L	5.748219 lbs/day	BPJ
NaCl O3 (Sodium Chlorate)	5189 mg/L	76354.02 lbs/day	2796.117 mg/L	41143.71 lbs/day	BPJ
Antimony, Total	0.13 mg/L	1.912897 lbs/day	0.010509 mg/L	0.154631 lbs/day	BPJ
Cadmium, Total	0.33984 mg/L	5.000613 lbs/day	0.130518 mg/L	1.920512 lbs/day	BPJ
Chromium, Total	0.324172 mg/L	4.770054 lbs/day	0.081783 mg/L	1.203406 lbs/day	BPJ
Copper, Total	1.529441 mg/L	22.50511 lbs/day	0.661427 mg/L	9.732632 lbs/day	BPJ
Potassium, Total	3618.353 mg/L	53242.59 lbs/day	911.1675 mg/L	13407.46 lbs/day	BPJ
Silver, Total	0.009417 mg/L	0.13857 lbs/day	0.005187 mg/L	0.07633 lbs/day	BPJ
Tin, Total	0.13 mg/L	1.912897 lbs/day	0.010509 mg/L	0.154631 lbs/day	BPJ
Titanium, Total	0.35 mg/L	5.150107 lbs/day	0.010509 mg/L	0.154631 lbs/day	BPJ
Vanadium, Total	0.869601 mg/L	12.79582 lbs/day	0.414566 mg/L	6.100171 lbs/day	BPJ
Zinc, Total	1.37038 mg/L	20.16458 lbs/day	0.025882 mg/L	0.380849 lbs/day	BPJ
Amine	1.77 mg/L	26.04483 lbs/day	0.953865 mg/L	14.03573 lbs/day	BPJ
Hydroquinone	1.77 mg/L	26.04483 lbs/day	0.953865 mg/L	14.03573 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	33 mg/L	485.5815 lbs/day	17.78392 mg/L	261.6831 lbs/day	BPJ
Fluoride	0.850303 mg/L	12.51186 lbs/day	0.297852 mg/L	4.382769 lbs/day	BPJ

Pollutant	Maximum		Average		
	Concentration	Mass	Concentration	Mass	Source
Outfall 301 - Only Pollutants from Process					
Group A					
Biochemical Oxygen Demand (BOD)	65 mg/L	956.448 lbs/day	35 mg/L	515.011 lbs/day	BPJ
Chemical Oxygen Demand (COD)	130 mg/L	1912.9 lbs/day	86 mg/L	1265.45 lbs/day	BPJ
Total Organic Carbon (TOC)	85 mg/L	1250.74 lbs/day	42 mg/L	618.013 lbs/day	BPJ
Total Suspended Solids (TSS)	103 mg/L	1515.6 lbs/day	78 mg/L	1147.74 lbs/day	BPJ
Flow	4.937 MGD	4.937 MGD	1.7632 MGD	1.7632 MGD	BPJ
Ammonia (as N)	1.4 mg/L	20.6004 lbs/day	0.14 mg/L	2.06004 lbs/day	BPJ
Temperature (Winter)	130 °F	130 °F	75 °F	75 °F	BPJ
Temperature (Summer)	190 °F	190 °F	115 °F	115 °F	BPJ
pH	6-9 SU	6-9 SU	6-9 SU	6-9 SU	BPJ
Group B					
Total Residual Chlorine	3.41 mg/L	50.1768 lbs/day	1.73 mg/L	25.4546 lbs/day	BPJ
Oil and Grease	10 mg/L	147.146 lbs/day	6.60 mg/L	97.1163 lbs/day	BPJ
Sulfide (as SO4)	17334 mg/L	255063 lbs/day	8010 mg/L	117864 lbs/day	BPJ
Sulfite (as SO3)	73.2 mg/L	1077.11 lbs/day	39.4 mg/L	580.461 lbs/day	BPJ
Aluminum, Total	6.22 mg/L	91.5248 lbs/day	3.35 mg/L	49.244 lbs/day	BPJ
Boron, Total	0.13 mg/L	1.9129 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Cobalt, Total	1.4 mg/L	20.6004 lbs/day	1.03 mg/L	15.1062 lbs/day	BPJ
Iron, Total	32.4 mg/L	476.753 lbs/day	14.39 mg/L	211.725 lbs/day	BPJ
Magnesium, Total	669 mg/L	9844.06 lbs/day	234 mg/L	3449.46 lbs/day	BPJ
Molybdenum, Total	0.13 mg/L	1.9129 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Manganese, Total	10.4 mg/L	153.032 lbs/day	1.84 mg/L	27.1199 lbs/day	BPJ
Barium, Total	59.7 mg/L	878.461 lbs/day	17.38 mg/L	255.736 lbs/day	BPJ
Phosphorus (as P)	4.85 mg/L	71.3658 lbs/day	1.21 mg/L	17.842 lbs/day	BPJ
Nitrate-Nitrite (as N)	50 mg/L	735.73 lbs/day	20.29 mg/L	298.557 lbs/day	BPJ
Chloride, Total	56430.4 mg/L	830351 lbs/day	42523 mg/L	625705 lbs/day	BPJ
Sodium, Total	36560.6 mg/L	537974 lbs/day	27550 mg/L	405386 lbs/day	BPJ
Calcium, Total	3981 mg/L	58578.8 lbs/day	952 mg/L	14011.9 lbs/day	BPJ
Strontium, Total	20.8 mg/L	306.064 lbs/day	10.67 mg/L	157.01 lbs/day	BPJ
Silica, Total	102 mg/L	1500.89 lbs/day	43.81 mg/L	644.692 lbs/day	BPJ
Bromide, Total	92.1 mg/L	1355.21 lbs/day	49.63 mg/L	730.334 lbs/day	BPJ
Iodine, Total	2.54 mg/L	37.3751 lbs/day	1.37 mg/L	20.102 lbs/day	BPJ
Nickel, Total	57.1 mg/L	840.203 lbs/day	26.35 mg/L	387.767 lbs/day	BPJ
Lead, Total	6.89 mg/L	101.384 lbs/day	0.39 mg/L	5.70945 lbs/day	BPJ
NaCl O3 (Sodium Chlorate)	5189 mg/L	76354 lbs/day	2796 mg/L	41143.7 lbs/day	BPJ
Antimony, Total	0.13 mg/L	1.9129 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Cadmium, Total	0.32 mg/L	4.70867 lbs/day	0.13 mg/L	1.90315 lbs/day	BPJ
Chromium, Total	0.31 mg/L	4.56152 lbs/day	0.07 mg/L	1.03484 lbs/day	BPJ
Copper, Total	1.46 mg/L	21.4833 lbs/day	0.65 mg/L	9.63469 lbs/day	BPJ
Potassium, Total	3609 mg/L	53105 lbs/day	908 mg/L	13357.7 lbs/day	BPJ
Silver, Total	0.008 mg/L	0.11772 lbs/day	0.00 mg/L	0.05947 lbs/day	BPJ
Tin, Total	0.13 mg/L	1.9129 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Titanium, Total	0.35 mg/L	5.15011 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Vanadium, Total	0.82 mg/L	12.066 lbs/day	0.41 mg/L	6.06629 lbs/day	BPJ
Zinc, Total	1.24 mg/L	18.2461 lbs/day	0.01 mg/L	0.15463 lbs/day	BPJ
Amine	1.77 mg/L	26.0448 lbs/day	0.95 mg/L	14.0357 lbs/day	BPJ
Hydroquinone	1.77 mg/L	26.0448 lbs/day	0.95 mg/L	14.0357 lbs/day	BPJ
NaClO (Sodium Hypochlorite)	33 mg/L	485.582 lbs/day	17.78 mg/L	261.683 lbs/day	BPJ
Outfall 301 - Pollutants from Miss. River Only					
Phosphorus (as P), Total	1.8 mg/L	27.109 lbs/day	0.24 mg/L	3.53993 lbs/day	BPJ
Nitrate-Nitrite (as N)	2.1 mg/L	31.2796 lbs/day	1.11 mg/L	16.3511 lbs/day	BPJ
Sodium, Total	64 mg/L	938.389 lbs/day	22.91 mg/L	337.136 lbs/day	BPJ
Chloride, Total	86 mg/L	1272.04 lbs/day	26.73 mg/L	393.269 lbs/day	BPJ
Sillica, Total	17 mg/L	250.237 lbs/day	6.61 mg/L	97.2638 lbs/day	BPJ
Nickel, Total	0.057 mg/L	0.83412 lbs/day	0.0032 mg/L	0.04636 lbs/day	BPJ
Lead, Total	0.035 mg/L	0.52133 lbs/day	0.0026 mg/L	0.03877 lbs/day	BPJ
Cadmium, Total	0.020 mg/L	0.29194 lbs/day	0.0012 mg/L	0.01736 lbs/day	BPJ
Chromium, Total	0.014 mg/L	0.20853 lbs/day	0.011 mg/L	0.16857 lbs/day	BPJ
Copper, Total	0.069 mg/L	1.0218 lbs/day	0.0067 mg/L	0.09794 lbs/day	BPJ
Magnesium, Total	30 mg/L	437.915 lbs/day	13.62 mg/L	200.427 lbs/day	BPJ
Potassium, Total	9 mg/L	137.63 lbs/day	3.38 mg/L	49.7276 lbs/day	BPJ
Silver, Total	0.0014 mg/L	0.02085 lbs/day	0.0011 mg/L	0.01686 lbs/day	BPJ
Vanadium, Total	0.050 mg/L	0.72986 lbs/day	0.0023 mg/L	0.03388 lbs/day	BPJ

Pollutant	Maximum		Average		
	Concentration	Mass	Concentration	Mass	Source
Zinc, Total	0.130 mg/L	1.91848 lbs/day	0.015 mg/L	0.22622 lbs/day	BPJ
Oil and Grease	11 mg/L	166.825 lbs/day	5.34 mg/L	78.5049 lbs/day	BPJ
Sulfate (as SO4)	125 mg/L	1835.07 lbs/day	54.43 mg/L	800.867 lbs/day	BPJ
Cobalt, Total	0.009 mg/L	0.12512 lbs/day	0.005 mg/L	0.08428 lbs/day	BPJ
Iron, Total	0.6 mg/L	8.34124 lbs/day	0.034 mg/L	0.49997 lbs/day	BPJ
Manganese, Total	0.03 mg/L	0.41706 lbs/day	0.013 mg/L	0.18542 lbs/day	BPJ
Barium, Total	0.14 mg/L	2.08531 lbs/day	0.094 mg/L	1.38782 lbs/day	BPJ
Calcium, Total	78 mg/L	1146.92 lbs/day	43.94 mg/L	646.627 lbs/day	BPJ
Aluminum, Total	0.014 mg/L	0.20853 lbs/day	0.011 mg/L	0.16857 lbs/day	BPJ
Fluoride	0.9 mg/L	12.5119 lbs/day	0.30 mg/L	4.38277 lbs/day	BPJ
BOD	6 mg/L	91.7536 lbs/day	1.79 mg/L	26.3303 lbs/day	BPJ
COD	142 mg/L	2085.31 lbs/day	31.49 mg/L	463.301 lbs/day	BPJ
TOC	23 mg/L	333.65 lbs/day	7.37 mg/L	108.389 lbs/day	BPJ
Flow	4.94 MGD	4.937 MGD	1.76 MGD	1.7632 MGD	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 401					
Group A					
Biochemical Oxygen Demand (BOD)	64 mg/L	375.325 lbs/day	29 mg/L	169.16 lbs/day	BPJ
Chemical Oxygen Demand (COD)	504 mg/L	2940.09 lbs/day	136 mg/L	795.282 lbs/day	BPJ
Total Organic Carbon (TOC)	123 mg/L	719.061 lbs/day	48 mg/L	277.971 lbs/day	BPJ
Total Suspended Solids (TSS)	60 mg/L	350.206 lbs/day	20 mg/L	116.735 lbs/day	BPJ
Flow	1.1106 MGD	1.1106 MGD	0.6994 MGD	0.6994 MGD	BPJ
Ammonia (as N)	5 mg/L	29.1838 lbs/day	2.5 mg/L	14.5919 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	90 °F	90 °F	BPJ
Temperature (Summer)	110 °F	110 °F	100 °F	100 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B					BPJ
Phosphorus (as P), Total	185 mg/L	1078.07 lbs/day	124 mg/L	722.616 lbs/day	BPJ
Sulfate (as SO4)	2386 mg/L	13926.9 lbs/day	1682 mg/L	9817.11 lbs/day	BPJ
Sulfate (as SO3)	78 mg/L	455.268 lbs/day	52 mg/L	303.512 lbs/day	BPJ
Chloride, Total	2068 mg/L	12068.2 lbs/day	1289 mg/L	7525.6 lbs/day	BPJ
Total Residual Chlorine	0.28 mg/L	1.63429 lbs/day	0.07 mg/L	0.40857 lbs/day	BPJ
Zinc, Total	4 mg/L	23.3471 lbs/day	2 mg/L	11.6735 lbs/day	BPJ
Sodium, Total	1297 mg/L	7572.76 lbs/day	777 mg/L	4532.78 lbs/day	BPJ
NaClO	1 mg/L	5.83677 lbs/day	0.5 mg/L	2.91838 lbs/day	BPJ
Molybdenum	5 mg/L	29.1838 lbs/day	3 mg/L	17.5103 lbs/day	BPJ
Iron, Total	42 mg/L	243.713 lbs/day	20 mg/L	117.398 lbs/day	BPJ
Acetate	40 mg/L	233.471 lbs/day	21 mg/L	122.572 lbs/day	BPJ
Amine	35 mg/L	204.287 lbs/day	18 mg/L	105.062 lbs/day	BPJ
Hexaphosphate	140 mg/L	817.147 lbs/day	70 mg/L	408.574 lbs/day	BPJ
Hydroquinone	35 mg/L	204.287 lbs/day	18 mg/L	105.062 lbs/day	BPJ
Acenaphthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acenaphthylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acrylonitrile	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
3,4-Benzofluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(k)Fluorathene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Bis(2-ethylhexyl)Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Carbon Tetrachloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroform	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Chlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chrysene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Di-n-butyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,4-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-trans-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dichlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloropropane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichloropropylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Diethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dimethylphenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Dimethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4,6-Dinitro-o-Cresol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 401					
2,4-Dinitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,6-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Ethylbenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluorene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobutadiene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methylene Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Naphthalene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenanthrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Tetrachloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Toluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chromium, Total	0.04387 mg/L	0.25607 lbs/day	0.038296 mg/L	0.22352 lbs/day	BPJ
Copper, Total	0.21497 mg/L	1.25474 lbs/day	0.02225 mg/L	0.12987 lbs/day	BPJ
Cyanide, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Lead, Total	0.10968 mg/L	0.64017 lbs/day	0.008808 mg/L	0.05141 lbs/day	BPJ
Nickel, Total	0.17549 mg/L	1.02428 lbs/day	0.010531 mg/L	0.06147 lbs/day	BPJ
1,2,4-Trichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,1-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,2-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Trichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Vinyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrate-Nitrite (as N)	6.58078 mg/L	38.4105 lbs/day	3.714681 mg/L	21.6817 lbs/day	BPJ
Sillica, Total	52.6463 mg/L	307.284 lbs/day	22.09661 mg/L	128.973 lbs/day	BPJ
Cadmium, Total	0.06142 mg/L	0.3585 lbs/day	0.003944 mg/L	0.02302 lbs/day	BPJ
Magnesium, Total	92.131 mg/L	537.747 lbs/day	45.53357 mg/L	265.769 lbs/day	BPJ
Potassium, Total	28.9554 mg/L	169.006 lbs/day	11.29723 mg/L	65.9393 lbs/day	BPJ
Silver, Total	0.00439 mg/L	0.02561 lbs/day	0.00383 mg/L	0.02235 lbs/day	BPJ
Vanadium, Total	0.15355 mg/L	0.89624 lbs/day	0.007697 mg/L	0.04493 lbs/day	BPJ
Oil and Grease	35.0975 mg/L	204.856 lbs/day	9.972835 mg/L	58.2091 lbs/day	BPJ
Cobalt, Total	0.02632 mg/L	0.15364 lbs/day	0.019148 mg/L	0.11176 lbs/day	BPJ
Manganese, Total	0.08774 mg/L	0.51214 lbs/day	0.042125 mg/L	0.24588 lbs/day	BPJ
Barium, Total	0.43872 mg/L	2.5607 lbs/day	0.315288 mg/L	1.84026 lbs/day	BPJ
Calcium, Total	241.295 mg/L	1408.38 lbs/day	146.9022 mg/L	857.434 lbs/day	BPJ
Aluminum, Total	0.04387 mg/L	0.25607 lbs/day	0.038296 mg/L	0.22352 lbs/day	BPJ
Fluoride	2.63231 mg/L	15.3642 lbs/day	0.995688 mg/L	5.8116 lbs/day	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Outfall 401 - Only Pollutants from Process					
Group A					
Biochemical Oxygen Demand (BOD)	45 mg/L	262.6545 lbs/day	23 mg/L	134.2456 lbs/day	BPJ
Chemical Oxygen Demand (COD)	65 mg/L	379.3898 lbs/day	31 mg/L	180.9397 lbs/day	BPJ
Total Organic Carbon (TOC)	53 mg/L	309.3486 lbs/day	23 mg/L	134.2456 lbs/day	BPJ
Total Suspended Solids (TSS)	60 mg/L	350.2059 lbs/day	20 mg/L	116.7353 lbs/day	BPJ
Flow	1.1106 MGD	1.1106 MGD	0.6994 MGD	0.6994 MGD	BPJ
Ammonia (as N)	5 mg/L	29.18383 lbs/day	2.5 mg/L	14.59191 lbs/day	BPJ
Temperature (Winter)	100 °F	100 °F	90 °F	90 °F	BPJ
Temperature (Summer)	110 °F	110 °F	100 °F	100 °F	BPJ
pH	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	6.0-9.0 SU	BPJ
Group B				0	BPJ
Phosphorus (as P), Total	179 mg/L	1044.781 lbs/day	123 mg/L	717.9222 lbs/day	BPJ
Sulfate (as SO4)	2000 mg/L	11673.53 lbs/day	1500 mg/L	8755.149 lbs/day	BPJ
Sulfate (as SO3)	78 mg/L	455.2677 lbs/day	52 mg/L	303.5118 lbs/day	BPJ
Chloride, Total	1800 mg/L	10506.18 lbs/day	1200 mg/L	7004.119 lbs/day	BPJ
Total Residual Chlorine	0.28 mg/L	1.634294 lbs/day	0.07 mg/L	0.408574 lbs/day	BPJ
Zinc, Total	4 mg/L	23.34706 lbs/day	2 mg/L	11.67353 lbs/day	BPJ
Sodium, Total	1100 mg/L	6420.442 lbs/day	700 mg/L	4085.736 lbs/day	BPJ
NaClO	1 mg/L	5.836766 lbs/day	0.5 mg/L	2.918383 lbs/day	BPJ
Molybdenum	5 mg/L	29.18383 lbs/day	3 mg/L	17.5103 lbs/day	BPJ
Iron, Total	40 mg/L	233.4706 lbs/day	20 mg/L	116.7353 lbs/day	BPJ
Acetate	40 mg/L	233.4706 lbs/day	21 mg/L	122.5721 lbs/day	BPJ
Amine	35 mg/L	204.2868 lbs/day	18 mg/L	105.0618 lbs/day	BPJ
Hexaphosphate	140 mg/L	817.1472 lbs/day	70 mg/L	408.5736 lbs/day	BPJ
Hydroquinone	35 mg/L	204.2868 lbs/day	18 mg/L	105.0618 lbs/day	BPJ
Acenaphthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acenaphthylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Acrylonitrile	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Anthracene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
3,4-Benzofluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(k)Fluorathene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Benzo(a)Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Bis(2-ethylhexyl)Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Carbon Tetrachloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chloroform	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Chlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chrysene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Di-n-butyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,4-Dichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-trans-Dichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dichlorophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2-Dichloropropane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,3-Dichloropropylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Diethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dimethylphenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Dimethyl Phthalate	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4,6-Dinitro-o-Cresol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,4-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2,6-Dinitrotoluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Ethylbenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluoranthene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Fluorene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Hexachlorobutadiene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ

Pollutant	Maximum		Average		Source
	Concentration	Mass	Concentration	Mass	
Hexachloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Methylene Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Naphthalene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nitrobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
2-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
4-Nitrophenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenanthrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Phenol	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Pyrene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Tetrachloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Toluene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Chromium, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Copper, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Cyanide, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Lead, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Nickel, Total	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,2,4-Trichlorobenzene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,1-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
1,1,2-Trichloroethane	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Trichloroethylene	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Vinyl Chloride	Believed Absent	Believed Absent	Believed Absent	Believed Absent	BPJ
Outfall 401 - Pollutants from Miss. River Only					
Phosphorus (as P), Total	5.703346 mg/L	33.28909 lbs/day	0.804209 mg/L	4.693981 lbs/day	BPJ
Nitrate-Nitrite (as N)	6.580784 mg/L	38.41049 lbs/day	3.714681 mg/L	21.68172 lbs/day	BPJ
Sodium, Total	197.4235 mg/L	1152.315 lbs/day	76.59136 mg/L	447.0459 lbs/day	BPJ
Chloride, Total	267.6185 mg/L	1562.027 lbs/day	89.34383 mg/L	521.479 lbs/day	BPJ
Sillica, Total	52.64627 mg/L	307.2839 lbs/day	22.09661 mg/L	128.9727 lbs/day	BPJ
Nickel, Total	0.175488 mg/L	1.02428 lbs/day	0.010531 mg/L	0.061469 lbs/day	BPJ
Lead, Total	0.10968 mg/L	0.640175 lbs/day	0.008808 mg/L	0.05141 lbs/day	BPJ
Cadmium, Total	0.061421 mg/L	0.358498 lbs/day	0.003944 mg/L	0.023023 lbs/day	BPJ
Chromium, Total	0.043872 mg/L	0.25607 lbs/day	0.038296 mg/L	0.223523 lbs/day	BPJ
Copper, Total	0.214972 mg/L	1.254743 lbs/day	0.02225 mg/L	0.129867 lbs/day	BPJ
Magnesium, Total	92.13097 mg/L	537.7469 lbs/day	45.53357 mg/L	265.7688 lbs/day	BPJ
Potassium, Total	28.95545 mg/L	169.0062 lbs/day	11.29723 mg/L	65.93926 lbs/day	BPJ
Silver, Total	0.004387 mg/L	0.025607 lbs/day	0.00383 mg/L	0.022352 lbs/day	BPJ
Vanadium, Total	0.153552 mg/L	0.896245 lbs/day	0.007697 mg/L	0.044928 lbs/day	BPJ
Zinc, Total	0.403621 mg/L	2.355844 lbs/day	0.051393 mg/L	0.299968 lbs/day	BPJ
Oil and Grease	35.09751 mg/L	204.856 lbs/day	9.972835 mg/L	58.2091 lbs/day	BPJ
Sulfate (as SO4)	386.0726 mg/L	2253.416 lbs/day	181.9428 mg/L	1061.957 lbs/day	BPJ
Cobalt, Total	0.026323 mg/L	0.153642 lbs/day	0.019148 mg/L	0.111761 lbs/day	BPJ
Iron, Total	1.754876 mg/L	10.2428 lbs/day	0.113585 mg/L	0.662969 lbs/day	BPJ
Manganese, Total	0.087744 mg/L	0.51214 lbs/day	0.042125 mg/L	0.245875 lbs/day	BPJ
Barium, Total	0.438719 mg/L	2.560699 lbs/day	0.315288 mg/L	1.840264 lbs/day	BPJ
Calcium, Total	241.2954 mg/L	1408.385 lbs/day	146.9022 mg/L	857.4339 lbs/day	BPJ
Aluminum, Total	0.043872 mg/L	0.25607 lbs/day	0.038296 mg/L	0.223523 lbs/day	BPJ
Fluoride	2.632313 mg/L	15.3642 lbs/day	0.995688 mg/L	5.811596 lbs/day	BPJ
BOD	19.30363 mg/L	112.6708 lbs/day	5.981786 mg/L	34.91428 lbs/day	BPJ
COD	438.7189 mg/L	2560.699 lbs/day	105.2539 mg/L	614.3425 lbs/day	BPJ
TOC	70.19502 mg/L	409.7119 lbs/day	24.62412 mg/L	143.7252 lbs/day	BPJ
Flow	1.1106 GPD	1.1106 GPD	0.6994 GPD	0.6994 GPD	BPJ

Appendix D

BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: **LA0120529**
Facility Name: **Shintech Louisiana, LLC – Plaquemine Plant**
Previous Critical Dilution: **N/A – Initial Permit**
Proposed Critical Dilution: **0.053% (10:1 ACR)**
Date of Review: **01/13/06; revised 02/06/06** Name of Reviewer: **Kim Gunderson**

Recommended Frequency by Species:

***Pimephales promelas* (Fathead minnow): Once/Quarter**[1]
***Daphnia pulex* (water flea): Once/Quarter**[1]

Recommended Dilution Series: **0.23%, 0.30%, 0.40%, 0.53%, and 0.71%**

Number of Tests Performed during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): N/A – Initial permit; no previous tests performed**
***Daphnia pulex* (water flea): N/A – Initial permit; no previous tests performed**
***Daphnia magna* (water flea): N/A – Initial permit; no previous tests performed**
***Ceriodaphnia dubia* (water flea): N/A – Initial permit; no previous tests performed**

Number of Failed Tests during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): N/A – Initial permit; no previous tests performed**
***Daphnia pulex* (water flea): N/A – Initial permit; no previous tests performed**
***Daphnia magna* (water flea): N/A – Initial permit; no previous tests performed**
***Ceriodaphnia dubia* (water flea): N/A – Initial permit; no previous tests performed**

Failed Test Dates during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): N/A – Initial permit; no previous tests performed**
***Daphnia pulex* (water flea): N/A – Initial permit; no previous tests performed**
***Daphnia magna* (water flea): N/A – Initial permit; no previous tests performed**
***Ceriodaphnia dubia* (water flea): N/A – Initial permit; no previous tests performed**

Previous TRE Activities: **N/A – Initial permit; no previous information available**

[1] Due to reported concentrations of zinc and chlorine from cooling tower blowdown at Internal Outfalls 201 and 401, LDEQ feels it is necessary to increase biomonitoring sampling frequency at Outfall 001 from yearly to quarterly to ensure the proposed discharges will not cause toxicity.

Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

Shintech Louisiana, LLC/Plaquemine Plant is a proposed polyvinyl chloride manufacturing facility located in Plaquemine, Iberville Parish, Louisiana. The anticipated date for the facility to complete construction and initiate full operations is December, 2007.

To adequately assess the facility's effluent potential for receiving stream and/or aquatic species toxicity, it is recommended that freshwater acute biomonitoring be an effluent characteristic of Outfall 002 (an intermittent discharge of 0.101 MGD of underflow from the raw river water intake clarifier and solids to the river) and of Outfall 001 (a discharge of 8.362 MGD of the combined effluents of the following internal outfalls) in LA0120529:

> **Outfall 101 - process wastewater and process area stormwater, sanitary wastewater, cooling tower blowdown, and miscellaneous de minimis wastewaters**
>
> **Outfall 201 – cooling tower blowdown, boiler blowdown, and miscellaneous de minimis wastewaters, including general facility washwaters**
>
> **Outfall 301 – process wastewater and process area stormwater and miscellaneous de minimis wastewaters**
>
> **Outfall 401 – deionized water backwash, cooling tower blowdown and miscellaneous de minimis wastewater**

The effluent dilution series shall consist of 0.23%, 0.30%, 0.40%, 0.53%, and 0.71% concentrations, with the 0.53% effluent concentration being defined as the critical dilution (the 10:1 Acute-to-Chronic ratio has been implemented because the critical dilution is less than 5%). The toxicity tests will be performed on the flow-weighted composite samples of Outfall 001 and Outfall 002. Due to reported concentrations of zinc and chlorine from cooling tower blowdown at Internal Outfalls 201 and 401, LDEQ feels it is necessary to increase biomonitoring sampling frequency at Outfall 001 from yearly to quarterly for *Daphnia pulex* and *Pimephales promelas* to ensure the proposed discharges will not cause toxicity.

Additional monitoring shall be conducted upon the usage of chlorine or any biofouling agent(s).

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards and the Best Professional Judgement (BPJ) of the reviewer(s).

Appendix E

OCT-27-2005 14:24 USCOE CENTRAL E.N.L. SEC 504 862 2574 P.01

P.O. BOX 60267
NEW ORLEANS, LA 70160

For use of this form see AR 340-15; the proponent agency is ODISC4

COMMAND/ OFFICE	NAME/ OFFICE SYMBOL	OFFICE TELEPHONE NO. (AUTOVON/Comm.)	FAX NO. (AUTOVON/Comm.)
FROM U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS	ROGER SWINDLER PERMITS REGULATORY BRANCH	(504) 862-2278	(504) 862-2574
TO KAREN HOLDEN			225 766-7440

CLASSIFICATION	PRECEDENCE	NO. PAGES (Including this Header)	DATE-TIME	MONTH	YEAR	RELEASER'S SIGNATURE
—	R	11	28	OCT	05	[redacted]

REMARKS

DA FORM 3918-R, JUL 90 DA FORM 3918-R, AUG 72 IS OBSOLETE USAPPC V2.10

Signed MOA.

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

FINAL MOA WITH ALL SIGNATURE PAGES

SHINTECH LOUISIANA, LLC

Richard P. Wagenaar, District Engineer
Pam Breaux, State Historic Preservation Officer
Alton D. LeBlanc Jr., Tribal Chairman
Karen Gautreaux, Deputy Secretary, DEQ
David Wise, Plant Manager

KAREN HOLDEN

COPIES SENT TO ALL SIGNATORIES

ROGER

MEMORANDUM OF AGREEMENT
AMONG
THE U.S. ARMY COPRS OF ENGINEERS, NEW ORLEANS DISTRICT,
THE LOUISIANA STATE HISTORIC PRESERVATION OFFICER,
THE CHITIMACHA TRIBE OF LOUISIANA,
THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY, AND
SHINTECH LOUISIANA, LLC
REGARDING PHASE III DATA RECOVERY OF ARCHAEOLOGICAL SITES
16IV94 AND 16IV109, IBERVILLE PARISH, LOUISIANA

WHEREAS, Shintech, Louisiana, LLC (Shintech), proposes to build a PVC Plant along the right descending bank of the Mississippi River approximately 3 miles southeast of Plaquemine, Iberville Parish, Louisiana; and

WHEREAS, the U.S. Army Corps of Engineers, New Orleans District's (CEMVN) issuance of a permit for the construction of the Shintech Plaquemine PVC Plant (Shintech), under Section 404 of the Clean Water Act (33 U.S.C. 1344), constitutes an "undertaking" as defined by Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f); and

WHEREAS, the Corps has determined that the undertaking will have an adverse effect on archaeological sites 16IV94 and 16IV109, each of which is eligible for listing in the National Register of Historic Places (NRHP) under Criterion D of 36 CFR 60.4, and has consulted with the Louisiana State Historic Preservation Officer (SHPO) pursuant to 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Section 470f); and

WHEREAS, the Corps has consulted with the Chitimacha Tribe of Louisiana (Chitimacha Tribe), for which sites 16IV94 and 16IV109 have cultural significance, and has invited the Chitimacha to sign this Memorandum of Agreement (MOA); and

WHEREAS, in accordance with 36 CFR Section 800.6(a)(1), the CEMVN has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination with specified documentation and the Council has chosen not to participate in the consultation pursuant to 36 CFR 800.6(a)(1)(iii);

NOW, THEREFORE, the CEMVN, the Louisiana SHPO, the Chitimacha Tribe, the Louisiana Department of Environmental Quality (LDEQ), and Shintech agree the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

The CEMVN will ensure that Shintech Louisiana, LLC carries out the following measures:

1. Treatment

Archaeological sites 16IV94 and 16IV109 have been determined to be eligible for listing in the National Register. Avoidance of National Register-eligible sites is the preferred treatment option. However, Shintech cannot feasibly relocate the proposed plant to avoid these sites. Therefore, Phase III archaeological data recovery operations shall be carried out at sites 16IV94 and 16IV109 as specified in the attached Data Recovery Plan, dated June 2005 (Attachment A). In addition, special conditions placed in the Section 404 permit concerning cultural resources will be adhered to (Attachment B).

2. Discovery of Human Remains

If human remains are encountered during the Phase III archaeological data recovery excavations at sites 16IV94 and 16IV109, all work will be immediately halted in the area of the discovered remains, and the Iberville Parish Sheriff, the State Archaeologist, the CEMVN permit manager, and the Chitimacha Tribe will be informed of the discovery with twenty-four hours (24) hours. The remains will be left in situ until the appropriate consultations have been completed. If it is determined that the remains are Chitimacha tribal ancestors, reinterment will be done in accordance with the agreement signed by Shintech and the Chitimacha Tribe, dated August 26, 2005, after appropriate documentation and non-destructive analyses of the remains have been completed.

3. Report Preparation

Within two (2) weeks of completion of the fieldwork, two (2) copies of a management summary report will be sent to each signatory for review and comment. After such time as is sufficient for review purposes and incorporation of comments, two (2) copies of the draft data recovery report will be sent to all consulting parties. After review and comment, two (2) copies of the final data recovery report will be sent to all consulting parties within one (1) year of completion of the fieldwork. All reporting shall adhere to the *American Antiquity* guidelines, the U.S. Department of the Interior's "Format Standards for Final Reports of Data Recovery Programs" (42 F.R. 5377-79), and the Louisiana Division of Archaeology's Report Writing Standards.

4. Curation

All recovered artifacts and associated records, with the exception of human remains and associated funerary objects, will be transferred and curated at a long-term and secure curation facility managed by the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism. Upon establishment of a long-term and secure curation facility meeting federal standards by the Chitimacha Tribe of Louisiana, all Chitimacha artifacts and copies of associated records will be transferred to the tribe in accordance with the agreement signed by Shintech and the Chitimacha Tribe, dated August 26, 2005.

STANDARDS AND GUIDELINES

1. The CEMVN will ensure that Shintech Louisiana, LLC carries out the mitigation plan in a professional manner and that key personnel, i.e., the principal investigator, project managers, and all archaeologists in supervisory positions meet the Secretary of the Interior's Qualification Standards (36 CFR Part 61).

2. The CEMVN will ensure that Shintech Louisiana, LLC carries out the processing, treatment, and curation of all recovered artifacts and associated records in accordance with "Curation of Federally-Owned and Administered Archaeological Collections" (36 CFR 79) and the Louisiana Division of Archaeology "Curation Guidelines and Standards" (revised 1995).

3. The CEMVN, SHPO, Chitimacha Tribe, DEQ, and Shintech shall follow the protocol and consultation process as outlined in the Advisory Council regulations for "Protection of Historic Properties: Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites" (36 CFR Part 800).

4. The CEMVN, SHPO, Chitimacha Tribe, DEQ, and Shintech shall ensure that the treatment, identification, and repatriation of human remains will follow procedures as outlined in the "Louisiana Unmarked Human Burial Sites Preservation Act" (Acts 1991, No. 704,§ 1, eff. Jan. 1, 1992) and the "Native American Graves Protection and Repatriation Act," 43 CFR Part 10, Section 10.6.

ADMINISTRATIVE STIPULATIONS

1. At any time during implementation of the measures stipulated in the MOA, should a reasonable objection to any measure or its manner of implementation be raised by a member of the public and/or the CEMVN, SHPO, Chitimacha Tribe, LDEQ, and Shintech, the CEMVN shall take the objection into account and consult as needed with the objecting party to resolve the objection.

2. Any party to this MOA may propose to the other parties, that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.

3. Any party to this MOA may terminate it by providing thirty (30) days notice to the other parties provided that the parties will consult during this period prior to termination to seek agreement on amendments or other actions that will avoid termination. In the event of termination, the CEMVN, in consultation with the Council and SHPO, will determine how to carry out the responsibilities under Section 106 in a manner consistent with applicable provisions of 36 CFR Part 800.

4. This agreement shall expire upon acceptance of the final data recovery report by the CEMVN, SHPO, and Chitimacha Tribe of Louisiana and acceptance of the artifacts and associated records by the SHPO.

5. This Agreement may be executed in counterparts, with a separate page for each signatory, and the CEMVN will ensure that each party is provided with a fully executed copy. This agreement will become effective on the date of the last signature to this Agreement.

6. Execution of this MOA and implementation of its terms shall satisfy the requirements of Section 106 and shall serve as evidence that the CEMVN has afforded the Advisory Council an opportunity to comment on the undertaking and its potential effects on historic properties, and the CEMVN has taken into account the effects of the undertaking on historic properties.

MEMORANDUM OF AGREEMENT SIGNATURE
Among the U.S. Army Corps of Engineers, New Orleans; the Louisiana State Historic Preservation Officer; the Chitimacha Tribe of Louisiana; the Louisiana Department of Environmental Quality; and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana.

U.S. Army Corps of Engineers, New Orleans District

By: [redacted] Date: 30 OCT 05

Richard P. Wagenaar, Colonel
District Engineer

MEMORANDUM OF AGREEMENT SIGNATURE
Among the U.S. Army Corps of Engineers, New Orleans; the Louisiana State Historic Preservation Officer; the Chitimacha Tribe of Louisiana; the Louisiana Department of Environmental Quality; and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana.

Louisiana Department of Culture, Recreation and Tourism

By: [redacted] Date: 10-10-05

Pam Breaux, State Historic Preservation Officer

MEMORANDUM OF AGREEMENT SIGNATURE
Among the U.S. Army Corps of Engineers, New Orleans; the Louisiana State Historic Preservation Officer; the Chitimacha Tribe of Louisiana; the Louisiana Department of Environmental Quality; and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana.

Chitimacha Tribe of Louisiana

By: [redacted] Date: 10/07/05

Alton D. LeBlanc, Jr., Tribal Chairman

MEMORANDUM OF AGREEMENT SIGNATURE
Among the U.S. Army Corps of Engineers, New Orleans; the Louisiana State Historic Preservation Officer; the Chitimacha Tribe of Louisiana; the Louisiana Department of Environmental Quality; and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana.

Louisiana Department of Environmental Quality

By: [redacted] Date: October 7, 2005

Karen Gautreaux, Deputy Secretary

MEMORANDUM OF AGREEMENT SIGNATURE
Among the U.S. Army Corps of Engineers, New Orleans; the Louisiana State Historic Preservation Officer; the Chitimacha Tribe of Louisiana; the Louisiana Department of Environmental Quality; and Shintech Louisiana, LLC regarding Phase III data recovery of archaeological sites 16IV94 and 16IV109, Iberville Parish, Louisiana.

Shintech, Louisiana, LLC

By: [redacted] Date: 10/06/05

David Wise, Plant Manager